

Electronic heat cost allocator Q caloric 5

Electronic device for heat cost allocation on the basis of measuring the share of heat output by radiators.

Can be used in the systems **Q opto** and **Q basic** or through an internal communication interface in the systems **Q walk-by** and **Q AMR**.

Available as compact and remote sensor option.





Application

The electronic heat cost allocator Q caloric 5 has been designed for decentralised use. Values are measured through one (radiator) or two (radiator and room air temperature) temperature sensors. The actual temperature difference between the ambient temperature and the radiator temperature will be determined in the 2-sensor mode, while a constant value is set for the ambient temperature for the 1-sensor mode.

These measured values are used as a basis for the calculation of the consumption. The main area of application is in central heating systems where the heating energy is used individually by different consumers.

The electronic heat cost allocator can be operated as a 1-sensor measuring system or 2-sensor measuring system with product and unit scale.

Such systems are used in e.g.:

- ~ Apartment buildings
- ~ Office and administration buildings

Typical users are:

- ~ Meter reading service companies
- ~ Housing industry and housing associations
- ~ Building service companies and property management

The heat cost allocator can be used for the following types of radiator:

- ~ Ribbed radiators
- ~ Tubular radiators
- ~ Panel-type radiators with horizontal and vertical water flow
- ~ Radiators with internal tube register
- ~ Convectors

Restrictions

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Electronic heat cost allocators cannot be used with steam heaters, fresh-air radiators, underfloor heating, ceiling heating elements or flap-controlled radiators.

In the case of combined valve and flap-controlled radiators, measuring devices may only be installed if the flap control unit has been removed or disabled in the "open" position.

Convectors that can change their output through an electric blower and towel heaters with an electric heating cartridge must not be fitted with electronic heat cost allocators unless the respective electric system has been removed or disabled.

1-sensor and 2-sensor measuring system

A joint use of different measuring device types is only allowed within a property as long as they all use a standard measuring system and a uniform measuring algorithm.

Compatibility:

The 202 CANNOT be replaced by the Q caloric 5 AMR because the radio sender in the HKV is not compatible with the rcu4-system.

The WHE2 can also not be replaced by the Q caloric 5 because neither the measuring algorithm nor the radio sender in the HKV (for WHE26) are compatible.



Installation types

New installation

Complete, first time new installation of meters.

Special features

During new installation, a property is equipped completely with electronic heat cost allocators for the first time. No evaporators or other metering devices have been used before.

Conversion installation

A billing unit is completely re-equipped with electronic heat cost allocators.

Special features

The radiators were previously fitted with meters by other companies, which are removed completely, including the mounting plate. The existing welding bolts are kept. The mounting plates will be exchanged. Possibly visible colour deviations at the radiator can be masked by a snap-on panel with a neutral kc-value.

Standard replacement

The (old) QUNDIS devices that exist in a billing period will be exchanged completely.

Special features

The radiators were previously equipped with old KUNDO/SIEMENS/QVEDIS meters. The existing welding bolts and the mounting plates remain in their existing position.

Exception:

An exchange of the mounting plates is required for systems equipped with HKVE 1801. These systems are technically equivalent to a "conversion installation".

Extension installation

This installation expands a billing unit equipped with QUNDIS meters with additional meters. This may be due to additional radiators being installed.

Special features

Caloric 5 meters are used, which work according to the algorithms of the existing meters in terms of measuring technology. The rules and specifications in the installation manuals are used for the installation and positioning of the already installed meters.

Repair replacement

Individual meters will be exchanged against new meters during a repair replacement. The reason for the exchange can be a defect of the meter.

Special features

Caloric 5 meters are used, which work according to the algorithms of the existing meters in terms of measuring technology. The existing welding bolts and mounting plates remain at the existing position, only the meter will be exchanged.



The electronic heat cost allocators Q caloric 5 replace the heat cost allocators HKVE 201x/202x and WHE3x/WHE4x.

The meters, which look almost identical from the outside, will be marked with P2 or P3 for identification and differentiation. In addition, a graphic at the rear of the meter shows the fitting mounting plate.

- ~ Compatibility to mounting plate P2 (aluminium profile for HKV 201/202): Rear lettering "P2" and embossing mounting plate.
- ~ Compatibility to mounting plate P3 (heat conductor for HKV WHE3/4): Rear lettering "P3" and embossing mounting plate.
- ~ The measuring algorithms of the heat cost allocator HKVE 201x/202x are implemented
- ~ Housing with pre-mounted lead factory seal
- ~ Remote sensor optional
- ~ Automatic identification of the "remote sensor mode"
- ~ Both device types, P2 and P3, optionally with radio support as AMR⁽¹⁾- or walk-by version
- ~ All devices optionally with optical data interface⁽²⁾ (IrDA close-range interface)
- ~ Integrated manipulation detection (e.g. unauthorised device opening)
- ~ meter can be used within the systems Q basic, Q opto, Q walk-by and Q AMR
- ~ Mixed used of the meter family HKVE 201x/202x and WHE3x/WHE4x with the family Q caloric 5 (downward compatible options available)

(1)**AMR**

The electronic heat cost allocators Q caloric 5 type P2 and P3 can be equipped with the AMR radio sender of the equipment family WHE4x.

The rcu4 is no longer supported by the Q caloric 5.

(2)Data interface

The electronic heat cost allocators Q caloric 5 type P2 and P3 can be equipped with the IrDA close range interface of the equipment family WHE3x/WHE4x.

The data interface 1107 is no longer supported by the Q caloric 5.



System modules

Q basic

Q basic are products that can be readout visually. The **Q basic** system represents the entry level to reliable consumer data recording. It is especially suited for tasks or systems that do not require complex data evaluations or particularly fast readout processes.

How **Q basic** functions

The time needed for classical on-site meter-reading should be borne in mind when assessing whether this system is suitable. Measuring results are noted manually.

Q opto

Devices in the **Q** opto system are read by using an optical close-range interface. More data can be readout using the **Q** opto system than is the case with visual readout of **Q** basic. These are products with a close range optical interface that can be readout with a corresponding unit.

How **Q opto** functions

The IrDA interface makes semi-automatic readout possible through the opto-electronic interface using special readout devices and software. Data exchange takes place using infrared light over short distances.

Q walk-by

Devices in the **Q walk-by** system are readout supported by local radio signals. **Q walk-by** makes meter reading as inexpensive as it is easy by using a mobile readout system – just walking by. The meter-reader does not have to enter the user's flat or office. In the case of smaller systems, data can usually be received outside the building.

How Q walk-by functions

The meters transmit consumption data at the set reading time. The meter-reader only needs his mobile readout system. This comprises a mobile data collector and a netbook with respective software. The data collector collects the radio telegrams and, after a plausibility check, transmits them wirelessly to the netbook via a Bluetooth interface.

Q AMR

Devices in the **Q AMR** system are readout radio-supported. The data acquired by the meters are sent wirelessly to the stationary network nodes. Each network node has all the consumption information available – on account of continual data exchange between the nodes. This data can be readout via the interface at the node, by radio from a (stationary) vehicle or via a gateway by modem or IP interface from a remote location.

How **Q AMR** functions

The meters send the current consumption data in cycles. The battery operated network nodes receive, check and store the data fully automatic. The data can now be read at any network node, either directly through the data interface or "from the outside" by radio. Even more comfortably: the data can be read through a gateway directly from the office, e.g. through the GSM phone network, through GPRS or through computer or broadband cable networks. **Q AMR** is compatible with the KNX European standard for home automation.



Type summary

On the basis of the type matrix, the heat cost allocator variant can be determined by combining the possible equipment options. Not all features can be combined with one another due to special technical details.

Product family

Options	Part no. *	Block1	Block2	Block3	Block4
Heat cost allocator generation 5		HCA5	XXXX	XXXX	XXXX

Housing design

Options	Part no. * Block1	Block2	Block3	Block4
Standard	HCA5	00 0 x	XXXX	XXXX
20x-compatible	HCA5	00 2 x	XXXX	XXXX
WHE3/WHE-compatible	HCA5	00 3 x	XXXX	XXXX

Communication

Options	Part no. * Block1	Block2	Block3	Block4
none	HCA5	00x 0	XXXX	XXXX
IrDA	HCA5	00x 1	XXXX	XXXX
walk-by	HCA5	00x 3	XXXX	XXXX
AMR	HCA5	00x 4	XXXX	XXXX
IrDA + walk-by	HCA5	00× E	XXXX	XXXX
IrDA + AMR	HCA5	00x G	XXXX	XXXX

Metering system

Options	Part no. * Block1	Block2	Block3	Block4
1-sensor (201-compatible)	HCA5	XXXX	1 x x x	XXXX
2-sensor (202-compatible)	HCA5	XXXX	2×××	XXXX
2-sensor (WHE3-compatible)	HCA5	XXXX	3×××	XXXX
2-sensor (WHE4-compatible)	HCA5	XXXX	4×××	XXXX
1-sensor (WHE3 and WHE4-compatible)	HCA5	XXXX	5×××	XXXX
1-sensor (201-compatible) with summer switc	h-off HCA5	XXXX	Axxx	XXXX
2-sensor (202-compatible) with summer switc	h-off HCA5	XXXX	Bxxx	XXXX
2-sensor (WHE3-compatible) with summer sw	itch-off HCA5	XXXX	C×××	XXXX
2-sensor (WHE4-compatible) with summer sw	itch-off HCA5	XXXX	Dxxx	XXXX
1-sensor (WHE3 and WHE4-compatible) with summer switch-off	HCA5	XXXX	Exxx	XXXX

K level

Options	Part no. * Block1	Block2	Block3	Block4
none	HCA5	XXXX	×00×	XXXX
26	HCA5	XXXX	×1A×	XXXX
60	HCA5	XXXX	×3C×	XXXX
01	HCA5	XXXX	x 0 1 x	XXXX
255	HCA5	XXXX	×FF×	XXXX



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Approvals

Options	Part no. * Block1	Block2	Block3	Block4
EN 834 (standard)	HCA5	XXXX	xxx0	XXXX
Other approvals being prepared				

Due date

Options	Part no. * Block1	Block2	Block3	Block4
31.12. (standard)	HCA5	XXXX	XXXX	0 ×××
31.01.	HCA5	XXXX	XXXX	1×××
28.02.	HCA5	XXXX	XXXX	2×××
31.03.	HCA5	XXXX	XXXX	3×××
30.04.	HCA5	XXXX	XXXX	4 ×××
31.05.	HCA5	XXXX	XXXX	5×××
30.06.	HCA5	XXXX	XXXX	6×××
31.07.	HCA5	XXXX	XXXX	7 ×××
31.08.	HCA5	XXXX	XXXX	8 ×××
30.09.	HCA5	XXXX	XXXX	9 ×××
31.10.	HCA5	XXXX	XXXX	Axxx
30.11.	HCA5	XXXX	XXXX	B ×××
none	HCA5	XXXX	XXXX	Z×××

Special options

Options	Part no. * Block1	Block2	Block3	Block4
none (standard)	HCA5	XXXX	XXXX	× 0 × ×
Due date without zeroing	HCA5	XXXX	XXXX	x 1 x x
Opening indicator discrete	HCA5	XXXX	XXXX	×2××
Opening indicator discrete + due date without zeroing	HCA5	XXXX	XXXX	×3××
Battery warning on	HCA5	XXXX	XXXX	x 4 xx
Battery warning on + due date without zeroing	HCA5	XXXX	XXXX	×5××
Battery warning on + opening indicator discrete	HCA5	XXXX	XXXX	×6××
Battery warning on + opening indicator discrete + due date without a	zeroing HCA5	XXXX	XXXX	×7××
Indicate values with error on	HCA5	XXXX	XXXX	x8xx
Indicate values with error on + due date without zeroing	HCA5	XXXX	XXXX	x9xx
Indicate values with error on + opening indicator discrete	HCA5	XXXX	XXXX	XAXX
Indicate values with error on + opening indicator discrete + due date	without HCA5	XXXX	XXXX	× B ××
zeroing				
Indicate values with error on + battery warning on	HCA5	XXXX	XXXX	×C××
Indicate values with error on + battery warning on + due date without	t zeroing HCA5	XXXX	XXXX	× D × ×
Indicate values with error on + battery warning on + opening indicato	r discrete HCA5	XXXX	XXXX	×E××
Indicate values for error on + battery warning on + due date without + due date without zeroing	zeroing HCA5	XXXX	XXXX	×F××



On the basis of the type matrix, the heat cost allocator variant can be determined by combining the possible equipment options. Not all features can be combined with one another due to special technical details.

Summer month beginning

Options	Part no. * Block1	Block2	Block3	Block4
no standard	HCA5	XXXX	XXXX	××0×
01.01.	HCA5	XXXX	XXXX	x x 1 x
01.02.	HCA5	XXXX	XXXX	×× 2 ×
01.03.	HCA5	XXXX	XXXX	×× 3 ×
01.04.	HCA5	XXXX	XXXX	×× 4 ×
01.05.	HCA5	XXXX	XXXX	×× 5 ×
01.06.	HCA5	XXXX	XXXX	××6×
01.07.	HCA5	XXXX	XXXX	××7×
01.08.	HCA5	XXXX	XXXX	×× 8 ×
01.09.	HCA5	XXXX	XXXX	× × 9 ×
01.10.	HCA5	XXXX	XXXX	x x A x
01.11.	HCA5	XXXX	XXXX	x x B x
01.12.	HCA5	XXXX	XXXX	xxCx

Summer month

End

Options	Part no. * Block1	Block2	Block3	Block4
no standard	HCA5	XXXX	XXXX	xxx 0
31.01.	HCA5	XXXX	XXXX	x x x 1
28.02.	HCA5	XXXX	XXXX	xxx 2
31.03.	HCA5	XXXX	XXXX	xxx 3
30.04.	HCA5	XXXX	XXXX	xxx 4
31.05.	HCA5	XXXX	XXXX	xxx5
30.06.	HCA5	XXXX	XXXX	xxx6
31.07.	HCA5	XXXX	XXXX	×××7
31.08.	HCA5	XXXX	XXXX	xxx 8
30.09.	HCA5	XXXX	XXXX	xxx 9
31.10.	HCA5	XXXX	XXXX	XXXA
30.11.	HCA5	XXXX	XXXX	xxx B
31.12.	HCA5	XXXX	XXXX	x x x C



Installation material

Installation sets for compact devices

Name	Part number
Ribbed radiator, division > 40 mm	HCAI-K001 001
Ribbed radiator, division = < 40 mm	HCAI-K001 002
Cast radiator, division 20/40 mm	HCAI-K001 003
End faces cast radiator	HCAI-K001 004
Cast ribbed radiator type KR	HCAI-K001 005
Ribbed radiator, with clearance > 40 mm	HCAI-K001 006
Panel radiator, flat front	HCAI-K001 007
Panel radiator, vertical profiles	HCAI-K002 001
Panel radiator with convention plate on the front	HCAI-K002 004
Bathroom radiator, collector on one side	HCAI-K003 005
Aluminium ribbed radiator	HCAI-K004 001
Radiator with internal tube register, deep water channel	HCAI-K006 002
Profile radiators	HCAI-K007 001
Flat tube radiator	HCAI-K007 003
Window ledge radiators	HCAI-K007 004

Installation accessories

Name	Part number
Installation template for holding against the radiator	HCAI-P001 001
Installation support for convector installation	FKT0017
Cable duct	FOZ0001

Installation sets remote sensors

Name	Part number
Wall bracket P2	HCAI-K010 0P2
Remote sensor complete, 1.5 m	HCAI-K010 0S1
Remote sensor complete, 2.5 m	HCAI-K010 0S2
Remote sensor complete, 5.0 m	HCAI-K010 0S5
Sensor attachment for ribbed radiator, division > 40 mm	HCAI-K010 001
Sensor attachment for ribbed radiator, division = < 40 mm	HCAI-K010 002
Sensor attachment for cast radiator type SR	HCAI-K010 003
Sensor attachment for cast radiator type RR, KR	HCAI-K010 004
Sensor attachment for panel radiator	HCAI-K010 005
Sensor attachment for aluminium ribbed radiator	HCAI-K010 010
Sensor attachment for ribbed convectors	HCAI-K010 012
Sensor attachment for window ledge radiators	HCAI-K010 013
Sensor attachment for profile radiators	HCAI-K010 014

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Ordering

The part numbers shown in the type summary must be quoted in orders.

Technology		
Teennology		
Measuring principle		
	The sensor algorithms in Q caloric 5 are downward-compatible with the measuring device families HKVE 201x and 202x. In addition, heat cost allocators compatible with WHE3x/WHE4x are also available for expansion installations and repair replacements by using the mounting plate P3.	
	 1-sensor mode Determination of radiator heat output on the basis of measured and validated radiator temperature with intelligent and dynamic heating operation detection. 	
	 2-sensor mode Determines radiator heat output on the basis of measured and validated radiator temperature by means of 2 temperature sensors. (radiator and room air temperature) 	
Measuring device type P2		
	~ Housing version fits on the mounting plate (aluminium profile) of HKVE 201x/202x	
	 Evaluation algorithm 201/202 1-sensor programmable Evaluation algorithm 202 2-sensor programmable 	
	~ Version with/without radio transmitter (AMR/walk-by)	
	~ Version with/without close range interface (IrDA)	
Measuring device type P3		
	~ Housing version fits on the mounting plate (heat conductor) of WHE3x/WHE4x	
	 Evaluation algorithm 201/202 1-sensor programmable Evaluation algorithm 202 2-sensor programmable 	
	~ Version with/without radio transmitter (AMR/walk-by)	
	~ Version with/without IrDA interface (IrDA close range interface)	



The programming adapter is used for communication with the meters.

Programming adapter

The programming adapter can be used as an individual programming tool or as a combination adapter with the IrDA programming and readout head.



There is a movable protective cover on the head which can be hinged down to protect the contact pins during transport.



Two rotary buttons are positioned at the rear, which can be used for programming.



For this purpose, the meter will be put into a receptacle (tray) and pushed down. The programming process will be completed with an acoustic signal.

IrDA programming and readout head(*)

The IrDA programming and readout head is used as a combination tool between a PC/ Netbook and the meter. The meter can be programmed and read by using the Q suite 5 caloric.



A flexible protective cover, which opens and is used as a storage compartment, is located at the head of the programming adapter.

The IrDA head inserted there will be connected to the PC/ Netbook.

The meter must be pressed into the receptacle (tray) during programming.

(*)Only required for meters without integrated close range interface.



Display

Equipment conditions, consumption values and metering system information are displayed on the LC display through a display loop.

Meter type

Display loops normal mode





Display loops sleep mode



The meters are delivered from the factory in sleep mode. The metering mode is inactive.



Display

Special displays P2/P3

Error messages

"Err 1" appears permanently. All other error messages are displayed in a fast sequence alternating with the consumption values.

Consumption display suppressed

Is displayed in case of an error after programming instead of the invalid consumption values.

End of battery run time

the operating time expired.

Data interface

indicated on this display.

Commissioning

interface.



Err 1

0.5 S Valt.



Depending on programming, will be displayed alternating with the consumption values after



Manipulation or housing opening

Will be displayed - in case of manipulation and depending on programming - either as plain text alternating with the consumption values or by the indicator "c" discretely on all displays.

Example: Display "current value" with "c".



discrete

(Close range interface) This display signalises an active close-range

Radio system activated (AMR/walk-by) The transmission of installation telegrams is

Display sequence: InSt8, InSt7, ... InSt1





clluse 3 S

This display appears following latching-on to the mounting plate. Then the display changes to the display loop of the normal mode.



The meter has detected a remote sensor and adjusts its measuring behaviour accordingly.





Available data

Device number

The device number is printed with a laser as an 8-digit code and as a bar code on the front of the device.

Display

- The display alternates between the following information.
- ~ Current consumption
- ~ Due date value
- ~ Due date
- ~ Validation level K
- ~ Checksum
- ~ Algorithm and sensor system
- ~ Data interface active
- ...
- ~ Sleep mode
- ~ Error messages
- ~ End of battery run time
- ~ Manipulation or housing opening
- ~ Installation telegram
- ...

Programming possibilities

The following information can be programmed in before the measuring device is put into operation:

Standard parameters

- ~ Sensor type
 - 1-sensor or 2-sensor measuring system
- ~ K-level / KC / KQ
 - Evaluation factors for the calculation of the heat output of a radiator (depending on the meter algorithm and the sensor type)
- ~ Next due date

Day on which the annual value is stored (can even be programmed with the programming adapter without IrDA interface)

~ Equipment name/equipment code

Equipment access data to prevent unauthorised equipment access

Special functions

~ Continuous counting (without zeroing)

The meter count will not be set to zero at the due date, but continues to count similar to a roller type counter. The annual value will be calculated based on the difference between the new and the old meter count.

As a default, this options is set to "no" (meter count will be reset to "0" at the due date). ~ Display battery warning

The HKV includes runtime monitoring. "bat00" will be displayed on the HKV display as an optical information that the battery service life has expired. As a default, this option will be set to "no" (no display of the battery warning)

~ Display meter readings in case of errors

The HKV display shows the units accumulated until the failure of the HKV as the meter count.

As a default, this option will be set to "no", i.e. "----" will be displayed on the HKV display if the consumption values are unusable for a billing due to an equipment error.



options	
	~ Start display as plain text
	An identified housing opening will be displayed as a plain text message on the HKV display as "c OPEn" alternating with the current value or the value of the previous year (old value). An identified housing opening can be identified by the display of the icon "c" on all displays (discrete display) if this option is set to "no".
	walk-by
	~ Radio system
	Re-programming for use in a Q AMR system (not reversible)
	~ Type of readout Options: annual (standard) = 48 readout days, once per year after the due date monthly = 4 readout dates after the first day of each month
	~ Transmission period
	Setting the time for the start and the end of the transmission of radio telegrams. The daily transmission period for the device is set to 10 hours. (Default = 8:00 AM - 6:00 PM CET)
	~ Transmission delay (offset)
	Time delay of the transmission of telegrams after the due date or start of the month in days (default = 0 days)
	A maximum of 2 week days selected from Friday, Saturday and Sunday can be defined as transmission-free days. At least 1 week day must be set. (Default = Su)
Technical features	
rechnicar reatures	
Function control	
	The measuring device carries a self-test out every 4 minutes. An error message "Err x" will be displayed if an error occurred during five consecutive metering cycles (20 minutes).
	After the error has been registered and shown on the display, the measuring device stops the measuring operation. The data of the error occurrence is stored internally.
Radio system	
	Uni-directional radio 868 MHz (wireless M-bus in accordance with EN 13757-4) according to current specification for AMR and walk-by.
	Useful data content of the AMR telegrams ~ Device number (8-digit)
	~ Device type/software version
	~ Time/date
	~ Error status
	~ Error date
	~ Due date
	~ Due date value
	~ Counter status at end of last month
	Useful data content of the walk-by telegrams
	~ Device number (8-digit)
	~ Device type/software version
	~ Time/date
	~ Error status
	~ Error date
	~ Current consumption
	~ Due date ~ Due date value

- ~ Counter status at end of last month
- ~ 13 Statistic values



Technical data

Device data

	as 1-sensor measuring system
Manauring avotom	with dynamic heating operating detection
Weasuring system	as 2-sensor measuring system
	1 sensor each for radiator and room air temperature
Device type	Q caloric 5 (P2) profile compatibility HKVE 20x
	Q caloric 5 (P3) profile compatibility WHEx
Power supply	3V lithium battery
Service life	typ. 10 years
Display	Liquid crystal display (LCD)
Scope of display	5 digits (00000 99999)
	P2: K level
Evaluation	1-sensor measuring system 255 levels
	2-sensor measuring system 999 levels
Radiator power range	21 Watt 9,999 Watt
Sensor temperature range	0 °C 105 °C
tm-max	105 °C (compact device), 105 °C (remote sensor device)
tm-min ^(*)	35 °C (2-sensor system), 55 °C (1-sensor system)
(*) average design temperature	
Temperature sensor	NTC, prematurely aged
	Compact device
Device versions	Remote sensor device (compact device with inserted remote sensor)
	Remote sensor cable lengths: 1.5 m, 2.5 m and 5.0 m
	New installation and conversion installation:
	Q caloric 5 with new installation material
Installation material	
in oralization matchai	Standard replacement, extension installation and repair replacement:
	Q caloric 5 with installation material following families HKVE 20x and
	WHE3x/WHE4x

Norms and standards

Heat cost allocator for acquiring consumption data for room heating	DIN EN 834
Type approval acc. to HKVO	A1.01.2011 - Q caloric 5 - P2
CE conformity	Directive 2004/108/EC (Electromagnetic Compatibility)
	With radio support Directive 1999/5/EC (R&TTE Directive)



Dimensional drawing meter















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