

# BLR-CM Q(U)- Voltage Controlled Regulation



## Energy supply through decentralized feed-in

- Block heating power plant
- Combined heat and power
- Solar plant
- Wind turbines
- Biogas plants .....

*Specification of the bdew (German Association of Energy and Water Industries)*

*Based on the **technical guideline for generating plants** on the medium-voltage grid of the bdew [1] (as of June 2008)*

*it is mandatory for every generating plant in the medium-voltage grid*

*to **provide reactive power** when **active power is supplied**.*

*The reactive power output serves the purpose of grid quality and in the medium-voltage grid is*

$\cos\varphi = 0,95_{\text{under-excited/inductive}}$  to  $0,95_{\text{over-excited/capacitive}}$

*at the **grid connection point** of the generating plant.*



**Voltage Controlled Regulation according to Q(U) characteristic**

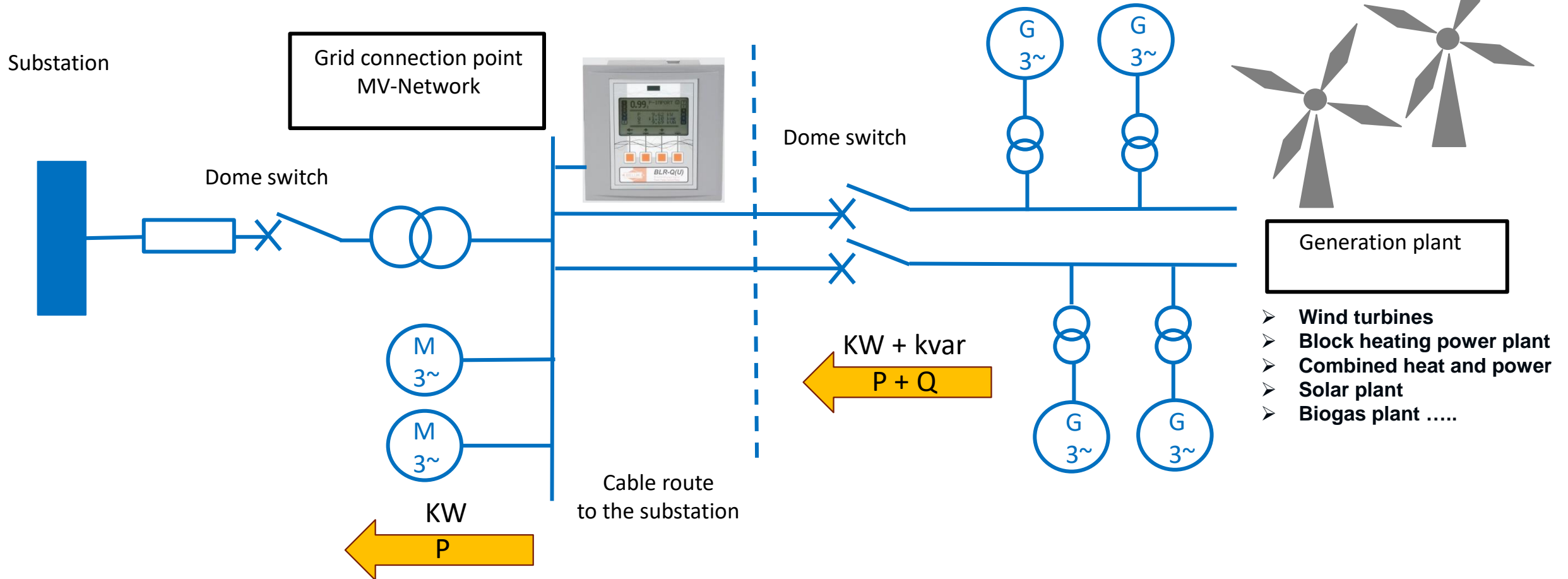


QR code  
To the Manual

# BLR-CM Q(U)- Voltage Controlled Regulation



## Energy supply through decentralized feed-in



# BLR-CM Q(U) Mode of operation



## How it works:

The **control target** of the BLR-Q(U) is the mains voltage to be hold.  
If the actual measured voltage is different from the mains voltage (undervoltage or overvoltage), the BLR-Q(U) switches on **capacitors** or **inductors** as required.

The demand for inductive or capacitive reactive power is automatically determined by the controller using an **adjustable characteristic curve**.

The specification of the target  $\cos \phi$  by means of the **adjustable characteristic curve** in conjunction with the BELUK algorithms enables with the BELUK algorithms a **dynamic** and **pendulum-free** control!

## Special features:

- Target  $\cos \phi$  dependent on **voltage level** (Q(U) or **active power** ( $\cos \phi P$ ))
- Output of the target  $\cos \phi$  **via interface (Modbus)** as setpoint specification for Decentralized Generation Facilities
- Automatic recognition of the **used outputs**
- Automatic detection and adjustment of **capacitor values**
- **Monitoring of capacitor and reactor values**
- **Over- and undervoltage control**
- **THD U and THD I control**
- **Overtemperature shutdown**

# BLR-CM Q(U)- Settings



How does the controller behave with the following settings :

**ULL : 400V**

**V-tolerance min. 10%**

**V-tolerance max. 10%**

=

**LIMIT      IST-VALUE**

Min. 360 V -> ULL 359 V ->  $U < \text{LIMIT} \odot \text{ALARM}$

Max. 440 V -> ULL 441 V ->  $U > \text{LIMIT} \odot \text{ALARM}$

**NO CONTROL!**

**IST-VALUE**

ULL : 361 V

TAR c 0.60

STEP 1 ON    c 100 var    ●

STEP 2 ON    c 100 var    ●

STEP 3 ON    c 100 var    ●

STEP 4 OFF    i 100 var    ○

STEP 5 OFF    i 100 var    ○

STEP 6 OFF    i 100 var    ○

**MIXED CONTROL!**

COS PHI CONTROL  
COS PHI : U  
**Voltage Controlled Regulation**

COS PHI CAP  
c 0,60

COS PHI : U  
**SET POINT 1**  
0.90 NOM. V  
**360 V**

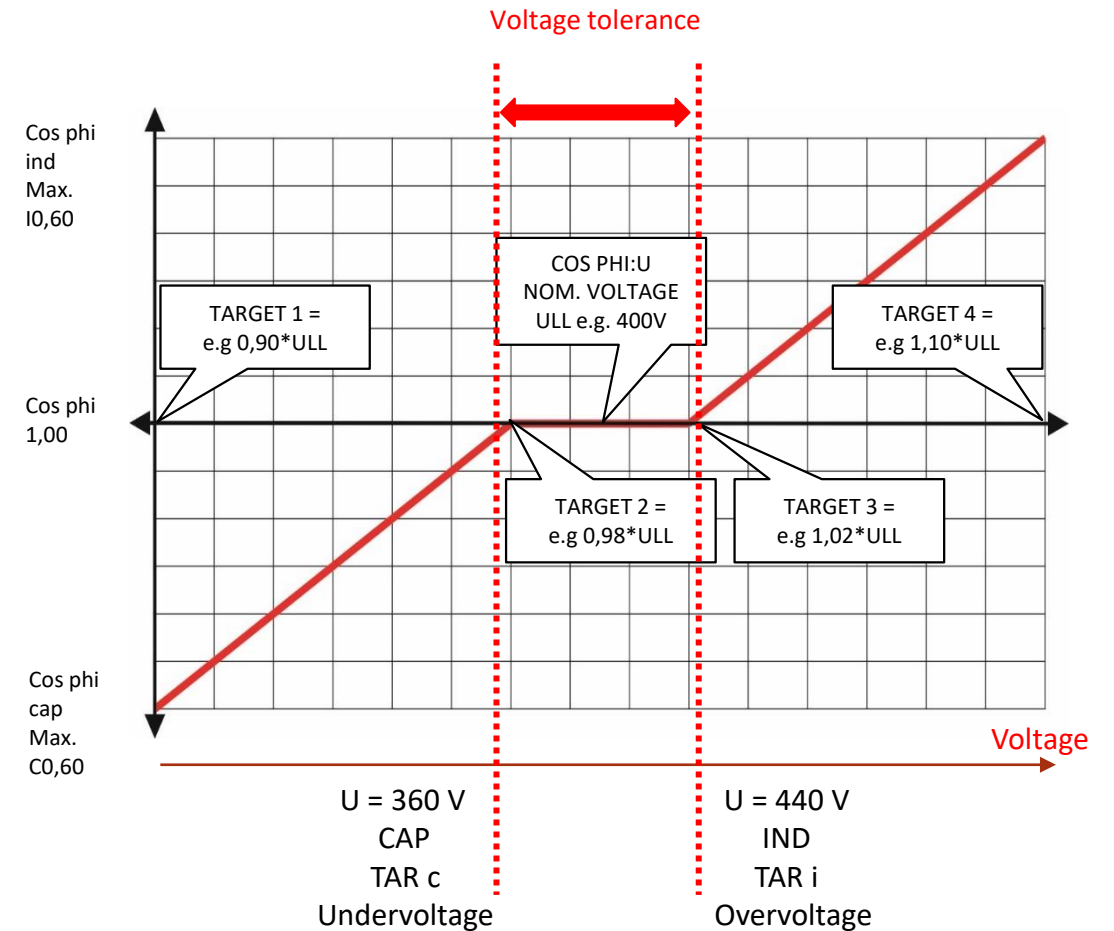
COS PHI CENTER  
1.00

COS PHI : U  
**SET POINT 2**  
0.98 NOM. V  
**392 V**

COS PHI : U  
**SET POINT 3**  
1.02 NOM. V  
**408 V**

COS PHI IND  
i 0,60

COS PHI : U  
**SET POINT 4**  
1.10 NOM. V  
**440 V**



# BLR-CM Q(U)



Measuring and supply voltage are separated.

Power supply: 115 V DC

230 V AC

Voltage measurement : 50V - 530V AC (Tolerance 0,5%)

1 phase

**(1 external current transformer is needed)!**

3 phase measurement **(+3A)**

**(3 external current transformer is needed)!**

Current measurement: 15 mA - 5 A (overload 20%)

Measuring method: True RMS

Determination of the  $\cos \phi$  related to the fundamental wave

Cos phi: 0.70 c - 0.60 l

**4 quadrant operation** (import/export) possible

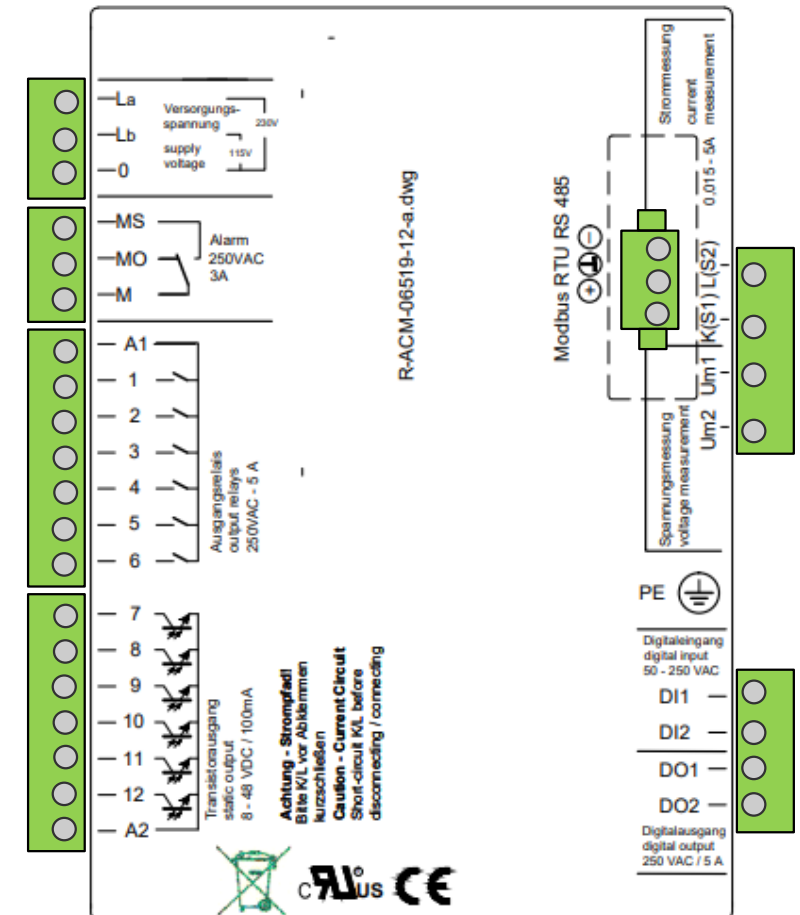
**Dynamically controls**

Capacitors via relay outputs

reactors via transistor outputs **(+RT version)**

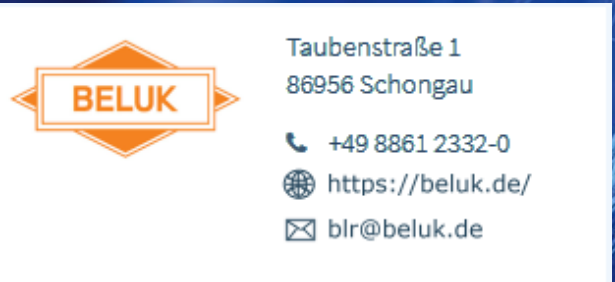
Application: in **LV** networks as well as **MV** and **HV**  
(version **+HV**)


Interface: Modbus RS485 **(+MB)**





BLR-ACM 12RT  
with Option MB


# BLR-CM Q(U)- Voltage Controlled Regulation



 Taubenstraße 1  
86956 Schongau

 +49 8861 2332-0

 <https://beluk.de/>

 [blr@beluk.de](mailto:blr@beluk.de)

## Are you interested in?

Do you have any questions about our products, we will be pleased to help you...

Contact us by mail

[blr@beluk.de](mailto:blr@beluk.de)

Our team will also be happy to assist you at

+ 49 8861 2332-0