



LWL – Transmitter

Type: LWL-T
LWLS-T

LWL-Decoder

Type: LWLS-D
LWLS-DI

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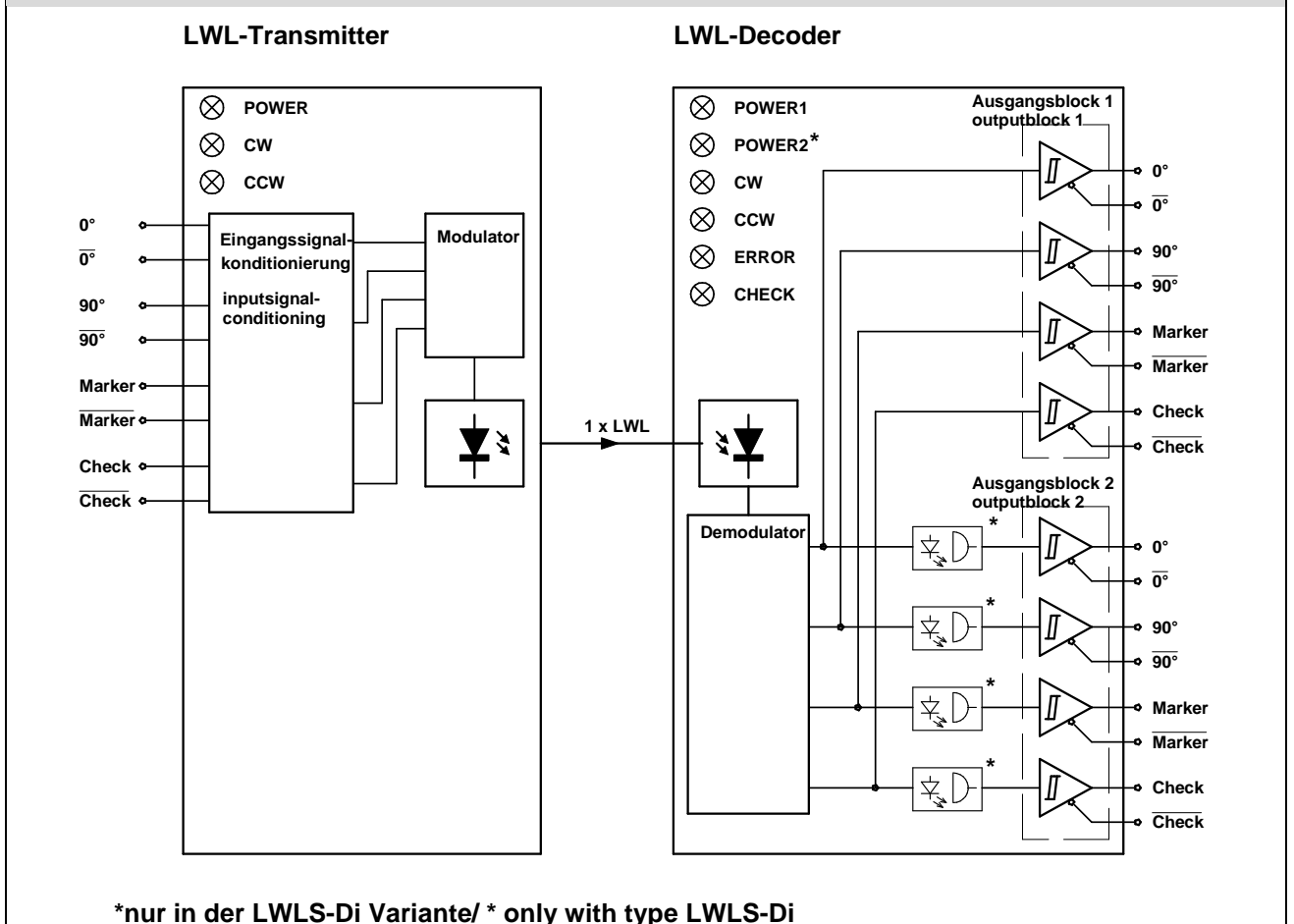
© Johannes Hübner
 Fabrik elektrischer Maschinen GmbH
 Siemensstrasse 7
 35394 Giessen / Germany

Tel.: +49 641 7969-0
 Fax: +49 641 73645

e-mail: info@huebner-giessen.com
 internet: www.huebner-giessen.com

Rechtsform: GmbH
 Sitz: Gießen
 Registergericht: Giessen
 Handelsregisternr.: HRB 126
 Geschäftsführer: Dieter Wulkow
 Oliver Rüspeler

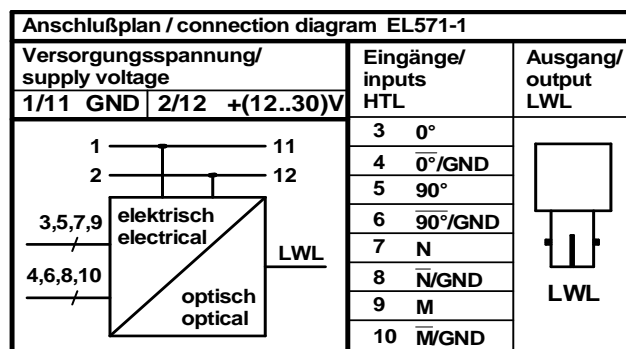
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|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Impulsgeber mit Option LWL | Incremental encoder with fiber optics option |
| 1.1 | Signalübertragung über Lichtwellenleiter | Signal transmission using fiber optics (LWL) |
| | <p>Alternativ zur herkömmlichen Signalübertragung über Kupferleiter, können die Signale der Impulsgeber auch über Lichtwellenleiter (LWL) übertragen werden.</p> <p>Hierbei werden die parallel anstehenden Signale 0°, 90°, Nullimpuls, LED-Kontrolle im Transmitter kodiert und über nur einen LWL zum Decoder im Schaltschrank übertragen.</p> <p>Im Decoder werden die optischen Signale wieder in elektrische Signale rückgewandelt und mit invertierten Signalen ausgeführt.</p> | <p>As an alternative to conventional signal transmission using copper cables, the signals from the incremental encoders can also be transmitted through fiber optics. The signals (0°, 90°, marker pulse, and LED check, which are available in parallel, are encoded in the transmitter and transmitted via just one fiber optics cable to the decoder in the equipment cabinet.</p> <p>The decoder converts the coded signals back into the standard electrical signals with their complementary inverted signals.</p> |
| 1.2 | Vorteile der Übertragung über LWL | Advantages of fiber optics transmission |
| | <ul style="list-style-type: none"> • Hohe Datenübertragungsfrequenz bei großen Kabellängen • EMI Unempfindlichkeit • Geringe Kabelkosten durch Übertragung mit nur einem Lichtwellenleiter • Hohe Übertragungssicherheit • Galvanische Trennung (Impulsgeber-Decoder) • LWL-Decoder mit zwei Ausgangsblöcken • optional galvanisch isolierte Ausgangsblöcke | <ul style="list-style-type: none"> • High transmission capacity for long cables • EMC insensitivity • High transmission reliability • Low cable costs through transmission via a single fiber optics cable. • Electrical isolation (encoder – decoder) • LWL decoder with two output blocks • Electrically isolated output blocks (option) |



| | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 | LWL-Transmitter (LWL-T) | LWL transmitter (LWL-T) |
| 2.1 | LWL-T - zur Montage im ungeschützten Bereich | LWL-T for installation in exposed situations |
| <p>Dieser Transmitter ist in einem Aluminium-Druckguß-Gehäuse eingebaut mit der Schutzart IP66.</p> <p>Die elektrischen Impulsgebersignale können auf einer Zugfederklemmleiste aufgelegt werden.</p> <p>Die Kabelabdichtung erfolgt über 2 Verschraubungen M20x1,5 für Kabeldurchmesser von 7,5 – 9 mm und 9 – 11 mm Optional kann die Kabeldurchführung für Kabel 9 - 11 mm gegen 7,5 – 9 mm getauscht werden.</p> | | <p>The LWL transmitter is mounted in a cast aluminium housing that provides enclosure protection to IP66.</p> <p>The electrical signals from the encoder can be connected to a spring-loaded terminal strip</p> <p>Sealing of the cable is achieved by 2 cable glands M20x1,5 for cable diameters from 7,5 - 9 mm and 9 mm – 11 mm. The cable gland for cables 9 – 11 mm can be changed into 7,5 – 9 mm.</p> |
| 2.2 | Technische Daten | Technical data |
| <p>Versorgungsspannung: +(12..30)V</p> <p>Leerlaufstrom (24V): ca. 35mA</p> <p>Frequenzbereich: 0...100kHz</p> <p>Ausgangssignal: optisch, 850 nm ST-Steckverbinder</p> <p>Abmessungen (LxBXH): 125mm x 80mm x 57mm</p> <p>Kabelverschraubung: M20x1,5 für Kabel- durchmesser 7,5 - 9mm M20x1,5 für Kabel- durchmesser 9 - 11mm</p> <p>Schutzart: IP66</p> <p>LWL-Empfehlung: Glasfaser 62,5/125µm oder 50/125µm</p> | | <p>Supply voltage: +12 to 30 V</p> <p>No load current: approx. 35mA</p> <p>Frequency range: 0 to 100kHz</p> <p>Output signal: optical, 850 nm ST plug connector</p> <p>Dimensions (LxWxH): 125mm x 80mm x 57mm</p> <p>Cable gland: M20x1,5 for cable dia. 7,5 - 9 mm M20x1,5 for cable dia. 9 - 11 mm</p> <p>Degree of protection: IP66</p> <p>LWL recommendation: glass fiber 62.5/125µm or 50/125µm</p> |

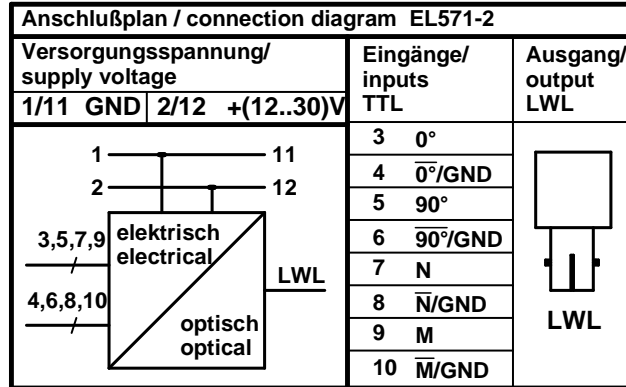
2.3 Anschlussplan für Typ LWL-T-1/ Connection diagram for type LWL-T-1

HTL + 12...30V



2.4 Anschlussplan für Typ LWL-T-2/ Connection diagram for type LWL-T-2


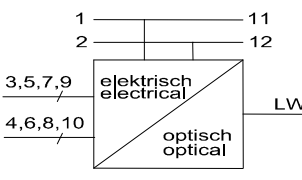
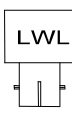
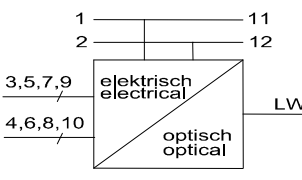
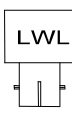
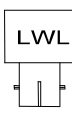
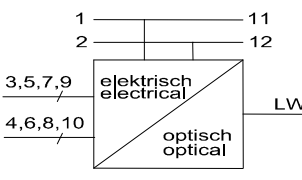
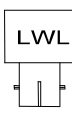
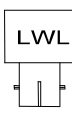
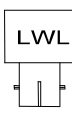
TTL 5V



2.5 LWL Transmitter/ LWL transmitter


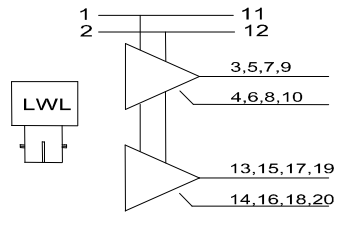
| Aluminium –Druck-Gehäuse Cast aluminium housing | Eingang Input | Kabeltyp Cable type | IDNr |
|----------------------------------------------------|------------------|------------------------|-------|
| LWL-T-1-50/125 | HTL | 50/ 125 µm | 17606 |
| LWL-T-1-62,5/125 | HTL | 62,5/ 125 µm | 17607 |
| LWL-T-2-50/125 | TTL | 50/ 125 µm | 17608 |
| LWL-T-2-62,5/125 | TTL | 62,5/ 125 µm | 17609 |

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| 3 LWL-Transmitter LWLS-T | LWL transmitter LWLS-T |
| <p>Der LWL-Transmitter dient zur Umsetzung elektrischer Inkrementalgebersignale auf Lichtwellenleitersignale. Die Gebersignale 0-Grad, 90-Grad, Nullimpuls und LED-Check werden kodiert und über einen LWL übertragen.</p> <p>Übertragungslängen von 1000m sind möglich. Die Signalwandlungszeit beträgt 2µs (gemessen: Eingang Transmitter - Ausgang Decoder). Die Eingangsstufen können wahlweise auf HTL- oder TTL-Pegel eingestellt werden. Die Einstellung erfolgt werkseitig.</p> | <p>The fiber optics transmitter is used to convert electrical encoder signals into fiber optics signals. The encoder signals 0°, 90°, marker pulse and LED check are coded, and transmitted via one optical fiber cable.</p> <p>Transmission distances of 1000m can be achieved. The time required for signal conversion is 2µs (measured from transmitter input to decoder output). The inputs can be set to HTL or TTL. The settings are made at the factory.</p> |
| 3.1 LWLS-T - zur Schaltschrankmontage | LWLS-T for cabinet mounting |
| <p>Das 23mm x 120mm x 115mm (BxHxT) große Modul kann auf Normtragschienen EN 50022 aufgerastet werden.</p> <p>Die Schutzart beträgt IP20.</p> <p>Die elektrischen Impulsgebersignale können auf Steckleisten aufgelegt werden. Der Lichtwellenleiter wird über einen ST-kompatiblen Steckverbinder angeschlossen.</p> <p>Der Betriebszustand des Systems wird durch LED's angezeigt:</p> <p>POWER Versorgungsspannung CW Rechtslauf CCW Linkslauf</p> | <p>The module, size 23mm x 120mm x115mm 0(WxHxD), can be snapped onto a standard rail to EN 50022.</p> <p>The Degree of protection is IP20.</p> <p>The electrical signals from the encoder can be connected to the terminal strip. The LWL decoder is connected via a ST-compatible plug</p> <p>LEDs on the front show the operating status:</p> <p>POWER Supply voltage CW CW CCW CCW</p> |
| 3.1 Technische Daten | Technical Data |
| <p>Versorgungsspannung: +(12..30)V Leerlaufstrom (24V): ca. 35mA Frequenzbereich: 0...100kHz Temperaturbereich: -20°C...70°C Ausgangssignal: optisch, 850 nm ST-Steckverbinder Abmessungen (BxHxT): 23mm x 120mm x 115mm Schutzart: IP20 LWL-Empfehlung: Glasfaser 62,5/125µm oder 50/125µm</p> | <p>Supply voltage: +12 to 30V No load current (24V): 35mA (approx.) Frequency range: 0 to 100kHz Temperature range: -20°C...70°C Output signal: optical, 850nm ST-plug Dimensions (WxHxD): 23mm x 120mm x 115mm Degree of protection: IP20 Optical fiber: glass fiber 62.5/125µm (recommended types) or 50/125µm</p> |


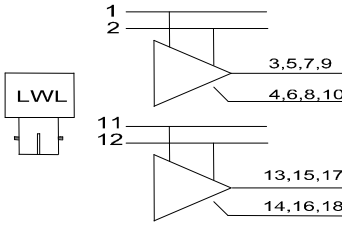
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| 3.1 | Technische Daten | Technical Data | | | | | | | | | | | | | | | | | |
|  | | Anschlußplan / connection diagram PN114-401-H | | | | | | | | | | | | | | | | | |
| | | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Versorgungsspannung supply voltage</td> <td style="width: 25%;">1 / 11 12..30VDC <small>intern verbunden / internally connected</small></td> <td style="width: 25%;">2 / 12 GND <small>intern verbunden / internally connected</small></td> </tr> <tr> <td></td> <td style="text-align: center;">  </td> <td style="text-align: center;"> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">EINGANG INPUT HTL</td> <td style="width: 50%;">AUSGANG OUTPUT LWL</td> </tr> <tr> <td>3 0°</td> <td rowspan="10" style="text-align: center;">  </td> </tr> <tr> <td>4 0°/GND</td> </tr> <tr> <td>5 90°</td> </tr> <tr> <td>6 90°/GND</td> </tr> <tr> <td>7 MARKER</td> </tr> <tr> <td>8 MARKER/GND</td> </tr> <tr> <td>9 CHECK</td> </tr> <tr> <td>10 CHECK/GND</td> </tr> </table> </td> </tr> </table> | Versorgungsspannung supply voltage | 1 / 11 12..30VDC <small>intern verbunden / internally connected</small> | 2 / 12 GND <small>intern verbunden / internally connected</small> | |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">EINGANG INPUT HTL</td> <td style="width: 50%;">AUSGANG OUTPUT LWL</td> </tr> <tr> <td>3 0°</td> <td rowspan="10" style="text-align: center;">  </td> </tr> <tr> <td>4 0°/GND</td> </tr> <tr> <td>5 90°</td> </tr> <tr> <td>6 90°/GND</td> </tr> <tr> <td>7 MARKER</td> </tr> <tr> <td>8 MARKER/GND</td> </tr> <tr> <td>9 CHECK</td> </tr> <tr> <td>10 CHECK/GND</td> </tr> </table> | EINGANG INPUT HTL | AUSGANG OUTPUT LWL | 3 0° |  | 4 0°/GND | 5 90° | 6 90°/GND | 7 MARKER | 8 MARKER/GND | 9 CHECK | 10 CHECK/GND |
| Versorgungsspannung supply voltage | 1 / 11 12..30VDC <small>intern verbunden / internally connected</small> | 2 / 12 GND <small>intern verbunden / internally connected</small> | | | | | | | | | | | | | | | | | |
| |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">EINGANG INPUT HTL</td> <td style="width: 50%;">AUSGANG OUTPUT LWL</td> </tr> <tr> <td>3 0°</td> <td rowspan="10" style="text-align: center;">  </td> </tr> <tr> <td>4 0°/GND</td> </tr> <tr> <td>5 90°</td> </tr> <tr> <td>6 90°/GND</td> </tr> <tr> <td>7 MARKER</td> </tr> <tr> <td>8 MARKER/GND</td> </tr> <tr> <td>9 CHECK</td> </tr> <tr> <td>10 CHECK/GND</td> </tr> </table> | EINGANG INPUT HTL | AUSGANG OUTPUT LWL | 3 0° |  | 4 0°/GND | 5 90° | 6 90°/GND | 7 MARKER | 8 MARKER/GND | | 9 CHECK | 10 CHECK/GND | | | | | |
| EINGANG INPUT HTL | AUSGANG OUTPUT LWL | | | | | | | | | | | | | | | | | | |
| 3 0° |  | | | | | | | | | | | | | | | | | | |
| 4 0°/GND | | | | | | | | | | | | | | | | | | | |
| 5 90° | | | | | | | | | | | | | | | | | | | |
| 6 90°/GND | | | | | | | | | | | | | | | | | | | |
| 7 MARKER | | | | | | | | | | | | | | | | | | | |
| 8 MARKER/GND | | | | | | | | | | | | | | | | | | | |
| 9 CHECK | | | | | | | | | | | | | | | | | | | |
| 10 CHECK/GND | | | | | | | | | | | | | | | | | | | |
| 3.2 | | LWL Transmitter/ LWL transmitter | | | | | | | | | | | | | | | | | |
| Schaltschrankmontage cabinet housing | | Eingang Input | Kabeltyp Cable type | IDNr | | | | | | | | | | | | | | | |
| LWLS-T-1-50/125 | HTL | 50/ 125 µm | 18461 | | | | | | | | | | | | | | | | |
| LWLS-T-1-62,5/125 | HTL | 62,5/ 125 µm | 18462 | | | | | | | | | | | | | | | | |
| LWLS-T-2-50/125 | TTL | 50/ 125 µm | 18463 | | | | | | | | | | | | | | | | |
| LWLS-T-2-62,5/125 | TTL | 62,5/ 125 µm | 18464 | | | | | | | | | | | | | | | | |
| 4 | | LWL-Decoder LWLS-D/ LWL S-Di | | | | | | | | | | | | | | | | | |
| <p>Der LWL-Decoder dient zur Rückwandlung der von einem Impulsgeber kommenden LWL-Signale. Nach der optisch-elektrischen Wandlung werden die Signale decodiert und auf zwei elektrisch entkoppelte Ausgangsblöcke geführt.</p> <p>In der LWLS-Di Variante kann durch Anlegen von zwei galvanisch getrennten Versorgungsspannungen der zweite Ausgangsblock galvanisch vom ersten Ausgangsblock getrennt werden.</p> <p>Beide Ausgangsblöcke können separat auf die Ausgabe von HTL bzw. TTL-Signalen eingestellt werden (Einstellung erfolgt werkseitig).</p> <p>Der Lichtwellenleiter wird über einen ST-kompatiblen Steckverbinder angeschlossen.</p> | | <p>The LWL decoder can convert the fiber optics signals received from an incremental encoder. After the optical-electrical conversion, the data are decoded and passed on to two electrically isolated output systems.</p> <p>With version LWLS-Di the 2nd output system can be isolated from the 1st output system connecting two electrically isolated supply voltages.</p> <p>Both output systems can be separately set to produce HTL or TTL signals. The settings are made at the factory.</p> <p>The fiber optics cable is connected via a ST-compatible plug.</p> | | | | | | | | | | | | | | | | | |
| 4.1 | | Der Betriebszustand des Systems wird durch LED's angezeigt: | | | | | | | | | | | | | | | | | |
| <p>POWER1 Versorgungsspannung 1</p> <p>POWER2 Versorgungsspannung 2 *</p> <p>CW Rechtslauf</p> <p>CCW Linkslauf</p> <p>ERROR Endstufenfehler (Überlastung)</p> <p>CHECK LED Kontrolle (Alterungszustand der Abtastdiode im Impulsgeber).</p> <p>Das 23mm x 120mm x 115mm (BxHxT) große Modul kann auf Normtragschienen EN 50022 aufgerastet werden.</p> | <p>LEDs on the front show the operating status:</p> <p>POWER1 Supply voltage 1</p> <p>POWER2 Supply voltage 2 *</p> <p>CW CW</p> <p>CCW CCW</p> <p>ERROR error in the output stages (overload)</p> <p>CHECK LED display to check ageing of the encoder sensor diode.</p> <p>The module, size 23mm x 120mm x115mm (WxHxD), can be snapped onto a standard rail to EN 50022.</p> | | | | | | | | | | | | | | | | | | |

| 4.2 Technische Daten: | Technical Data: |
|-------------------------------------|---------------------------------|
| Versorgungsspannung 1: +(12..30)V | Supply voltage 1: +12 to 30V |
| Versorgungsspannung 2: +(12..30)V * | Supply voltage 2: +12 to 30V * |
| Leerlaufstrom (24V): 30mA | No load current (24V): 30mA |
| Ausgangsstrom (HTL): 60mA | Output current (HTL): 60mA |
| | 120mA (kurzzeitig) |
| Ausgangsstrom (TTL): RS422A | Output current (TTL): RS422A |
| Frequenzbereich: 0...100kHz | Frequency range: 0 to 100kHz |
| Temperaturbereich: -20°C...70°C | Temperature range: -20°C...70°C |
| Schutzart: IP20 | Degree of protection: IP20 |
| * nur in der LWLS-Di Variante | * only with type LWLS-Di |

4.3 LWL-Decoder LWLS-D/ LWL decoder LWLS-D

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------|--|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--|----------|----------|------|-------|------|-------|-------|--------|-------|--------|----------|-----------|----------|-----------|---------|----------|----------|
|  | Anschlußplan / connection diagram PN115-401D-H | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Versorgungsspannung supply voltage</td> <td>1 / 11 12..30VDC intern verbunden / internally connected</td> </tr> <tr> <td></td> <td>2 / 12 GND intern verbunden / internally connected</td> </tr> </table> | Versorgungsspannung supply voltage | 1 / 11 12..30VDC intern verbunden / internally connected | | 2 / 12 GND intern verbunden / internally connected | <table border="1"> <tr> <td colspan="2">AUSGANG / OUTPUT</td> </tr> <tr> <td>HTL 60mA</td> <td>HTL 60mA</td> </tr> <tr> <td>3 0°</td> <td>13 0°</td> </tr> <tr> <td>4 0°</td> <td>14 0°</td> </tr> <tr> <td>5 90°</td> <td>15 90°</td> </tr> <tr> <td>6 90°</td> <td>16 90°</td> </tr> <tr> <td>7 MARKER</td> <td>17 MARKER</td> </tr> <tr> <td>8 MARKER</td> <td>18 MARKER</td> </tr> <tr> <td>9 CHECK</td> <td>19 CHECK</td> </tr> <tr> <td>10 CHECK</td> <td>20 CHECK</td> </tr> </table> | AUSGANG / OUTPUT | | HTL 60mA | HTL 60mA | 3 0° | 13 0° | 4 0° | 14 0° | 5 90° | 15 90° | 6 90° | 16 90° | 7 MARKER | 17 MARKER | 8 MARKER | 18 MARKER | 9 CHECK | 19 CHECK | 10 CHECK |
| Versorgungsspannung supply voltage | 1 / 11 12..30VDC intern verbunden / internally connected | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 / 12 GND intern verbunden / internally connected | | | | | | | | | | | | | | | | | | | | | | | | |
| AUSGANG / OUTPUT | | | | | | | | | | | | | | | | | | | | | | | | | |
| HTL 60mA | HTL 60mA | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 0° | 13 0° | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 0° | 14 0° | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 90° | 15 90° | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 90° | 16 90° | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 MARKER | 17 MARKER | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 MARKER | 18 MARKER | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 CHECK | 19 CHECK | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 CHECK | 20 CHECK | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | |

4.4 LWL-Decoder LWLS-Di/ LWL decoder LWLS-Di

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------|--|-------|-------------------------------------------|--------------|--|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--|----------|----------|------|-------|------|-------|-------|--------|-------|--------|----------|-----------|----------|-----------|---------|----------|----------|
|  | Anschlußplan / connection diagram PN115-404Di-H | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <tr> <td>Versorgungsspannung 1 supply voltage 1</td> <td>1 12..30VDC</td> </tr> <tr> <td></td> <td>2 GND</td> </tr> <tr> <td>Versorgungsspannung 2 supply voltage 2</td> <td>11 12..30VDC</td> </tr> <tr> <td></td> <td>12 GND</td> </tr> </table> | Versorgungsspannung 1 supply voltage 1 | 1 12..30VDC | | 2 GND | Versorgungsspannung 2 supply voltage 2 | 11 12..30VDC | | 12 GND | <table border="1"> <tr> <td colspan="2">AUSGANG / OUTPUT</td> </tr> <tr> <td>HTL 60mA</td> <td>HTL 60mA</td> </tr> <tr> <td>3 0°</td> <td>13 0°</td> </tr> <tr> <td>4 0°</td> <td>14 0°</td> </tr> <tr> <td>5 90°</td> <td>15 90°</td> </tr> <tr> <td>6 90°</td> <td>16 90°</td> </tr> <tr> <td>7 MARKER</td> <td>17 MARKER</td> </tr> <tr> <td>8 MARKER</td> <td>18 MARKER</td> </tr> <tr> <td>9 CHECK</td> <td>19 CHECK</td> </tr> <tr> <td>10 CHECK</td> <td>20 CHECK</td> </tr> </table> | AUSGANG / OUTPUT | | HTL 60mA | HTL 60mA | 3 0° | 13 0° | 4 0° | 14 0° | 5 90° | 15 90° | 6 90° | 16 90° | 7 MARKER | 17 MARKER | 8 MARKER | 18 MARKER | 9 CHECK | 19 CHECK | 10 CHECK |
| Versorgungsspannung 1 supply voltage 1 | 1 12..30VDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 2 GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Versorgungsspannung 2 supply voltage 2 | 11 12..30VDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 12 GND | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AUSGANG / OUTPUT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HTL 60mA | HTL 60mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 0° | 13 0° | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 0° | 14 0° | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 90° | 15 90° | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 90° | 16 90° | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 MARKER | 17 MARKER | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 MARKER | 18 MARKER | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 CHECK | 19 CHECK | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 CHECK | 20 CHECK | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

4.5 LWL-Decoder/LWL decoder

| Schaltschrankmontage cabinet housing | Ausgang Output | IDNr |
|-----------------------------------------|-------------------|-------|
| LWLS-D-1 | HTL/HTL | 18465 |
| LWLS-D-2 | HTL/TTL | 18466 |
| LWLS-D-3 | TTL/TTL | 18467 |

| 4.6 LWL-Decoder galvanisch getrennt/LWL decoder isolated | | | |
|----------------------------------------------------------|-------------------|--|-------|
| S chaltschrankmontage cabinet housing | Ausgang Output | | IDNr |
| LWLS-Di-1 | HTL/HTL | | 18471 |
| LWLS-Di-2 | HTL/TTL | | 18472 |
| LWLS-Di-3 | TTL/TTL | | 18473 |

Bemerkungen/ notes: