

## 24V 20A Buffer (Hold-Up) DIN Rail Module

<https://product.tdk.com/en/power/dbm>  
[www.emea.lambda.tdk.com/dbm](http://www.emea.lambda.tdk.com/dbm)



The DBM20 20A buffer module is ideal for providing short term hold-up or peak power for loads powered by a 24Vdc output AC-DC power supply. During normal operation, energy is stored in the DBM20's electrolytic capacitors. When the AC power is interrupted for a short period of time, the DBM20 continues to power the load, allowing equipment to shutdown in a safe and controlled manner. The DBM20 can be set to fixed or variable buffer mode. In fixed mode it will provide power when the input voltage drops to 22.4V, in variable mode when the input decreases by 1V. Multiple buffer modules can be paralleled for additional hold-up time. Product status can be accessed remotely via a DC OK relay, or locally using the LED indicators. The output voltage can also be inhibited to avoid an unsafe discharge of the stored energy.

| Features                                           | Benefits                                            |
|----------------------------------------------------|-----------------------------------------------------|
| • Provides 250ms Additional Hold-Up Time at 448W   | • Avoids Loss of Data During AC Power Interruptions |
| • Utilizes Electrolytic Capacitors to Store Energy | • No Batteries to Service or Maintain               |
| • Narrow 49mm Width                                | • Increases Available Space on the DIN Rail         |
| • Parallel Capable                                 | • Hold-Up Time Can Be Extended                      |
| • Output Remote On/Off Function                    | • Avoids Unsafe Discharge of Stored Energy          |

| Model Selector |                                      |                                        |                        |                             |              |
|----------------|--------------------------------------|----------------------------------------|------------------------|-----------------------------|--------------|
| Model          | Output Voltage<br>Fixed Mode (V) (1) | Output Voltage<br>Dynamic Mode (V) (1) | Maximum<br>Current (A) | Average Buffer<br>Power (W) | Terminals    |
| DBM20          | 22.4                                 | Vin-1                                  | 20                     | 448                         | Screw        |
| DBM20/E        | 22.4                                 | Vin-1                                  | 20                     | 448                         | Spring Clamp |

| Related Products                                  |                                       |                                                         |
|---------------------------------------------------|---------------------------------------|---------------------------------------------------------|
| Type                                              | Part Number(s)                        | Description                                             |
| Redundancy module                                 | <a href="#">DRM40</a>                 | 20 to 40A DIN Rail Redundancy Module                    |
| Low power DIN rail power supplies                 | <a href="#">DRB15, 30, 50, 100</a>    | 15 to 100W AC-DC DIN rail power supplies                |
| Mid to high power DIN rail power supplies         | <a href="#">DRB120, 240, 480</a>      | 120 to 480W AC-DC DIN rail power supplies               |
| Mid to high power premium DIN rail power supplies | <a href="#">DRF120, 240, 480, 960</a> | 120 to 960W AC-DC DIN rail power supplies               |
| DIN rail mount filters                            | <a href="#">RSMN</a>                  | 3A to 30A 250Vac 2 stage filters with pulse attenuation |
| DIN rail mount filters                            | <a href="#">RSEV</a>                  | 6A to 30A 250Vac 2 stage filters                        |
| RSEV DIN rail mounting kit                        | <a href="#">DIN-RSEV</a>              | RSEV DIN rail mounting kit                              |

| Specifications                     |     |                                                    |
|------------------------------------|-----|----------------------------------------------------|
| Model                              |     | DBM20                                              |
| Input                              |     |                                                    |
| Input Voltage range                | Vdc | Fixed Mode: 23 - 30, VIN-1 Mode: 24 - 30           |
| Input Voltage Maximum Limit        | Vdc | 35                                                 |
| Input Current (Typical)            | A   | Charging Mode: 0.8, Ready Mode: 0.2                |
| Charging Time (Typical)            | s   | 40                                                 |
| Hold Up Time (Typical)             | ms  | 250                                                |
| Conducted & Radiated EMI           | -   | EN55032-B CISPR32-B                                |
| Immunity                           | -   | See immunity table                                 |
| Safety Certifications and Markings | -   | IEC/UL/CSA/EN62368-1, UL508, CE Mark and UKCA Mark |

| Immunity                        |             |            |          |                                                |
|---------------------------------|-------------|------------|----------|------------------------------------------------|
| Test                            | Standard    | Test Level | Criteria | Notes                                          |
| ESD                             | EN61000-4-2 | 4          | B        | 16kV air, 8kV contact                          |
| Radiated Susceptibility         | EN61000-4-3 | 3          | A        | -                                              |
| Electrical Fast Transient Burst | EN61000-4-4 | 1-3        | B        | Signal pin to FG Lvl 1                         |
| Surge                           | EN61000-4-5 | 1-2        | B        | Common mode only Lvl 2, Signal pin to FG Lvl 1 |
| Conducted Susceptibility        | EN61000-4-6 | 3          | A        | -                                              |

| Specifications                         |        |                                                                              |
|----------------------------------------|--------|------------------------------------------------------------------------------|
| Model                                  |        | DBM20                                                                        |
| Output                                 |        |                                                                              |
| Buffer Voltage Tolerance (Load > 5%)   | %      | Fixed Mode: ±2, Dynamic Mode: +3 to -4                                       |
| Switching Frequency (Typical)          | kHz    | Buck Converter: 100, Boost Converter: 70                                     |
| Ripple & Noise                         | mV     | <240                                                                         |
| Minimum Load                           | -      | No minimum load required                                                     |
| Overcurrent Protection                 | %      | >105 of buffer current                                                       |
| Input Overvoltage Protection           | V      | 35                                                                           |
| Overtemperature Protection             | -      | No                                                                           |
| Remote On/Off                          | -      | Yes                                                                          |
| DC OK Relay                            | -      | Photo MOS relay closed when DC is okay. (30V 0.2A)                           |
| Status Signals                         | -      | Photocoupled signals indicating fully charged and discharging modes          |
| Indicators                             | -      | Charging (green) and discharging (red) LEDs                                  |
| Parallel Operation                     | -      | Possible, see installation manual                                            |
| Series Operation                       | -      | Not possible                                                                 |
| Environmental                          |        |                                                                              |
| Operating Temperature                  | °C     | -25 to +70                                                                   |
| Storage Temperature                    | °C     | -25 to +85                                                                   |
| Humidity (non condensing)              | %RH    | Operating: 30 - 90, storage: 10 - 90                                         |
| Cooling                                | -      | Convection                                                                   |
| Altitude                               | m      | 5,000                                                                        |
| Withstand Voltage (For 1 minute)       | Vac    | Input and output to ground 500                                               |
| Isolation Resistance                   | MΩ     | >100 at 25°C, 70%RH & 500VDC (input and output to ground)                    |
| Vibration (Non Operating)              | -      | 10 - 55Hz (sweep for 1 min) 19.6m/s² (constant X, Y, Z axis for 1 hour each) |
| Shock                                  | m/s²   | < 196.1                                                                      |
| Other                                  |        |                                                                              |
| Weight (Typ)                           | g      | 740                                                                          |
| Size (WxHxD)                           | mm     | 49 x 123.6 x 115.4                                                           |
| Size (WxHxD)                           | Inches | 1.93 x 4.87 x 4.54                                                           |
| Connectors                             |        | Screw terminal or spring type. See model selector                            |
| DIN Rail Type                          | -      | Suitable for mounting on TS-35/7.5 or TS35/15 DIN Rails                      |
| MTBF - Telcordia TR-332 issue 5 (25°C) | Hours  | 1,026,962                                                                    |
| Warranty                               | yrs    | 5                                                                            |

## Notes

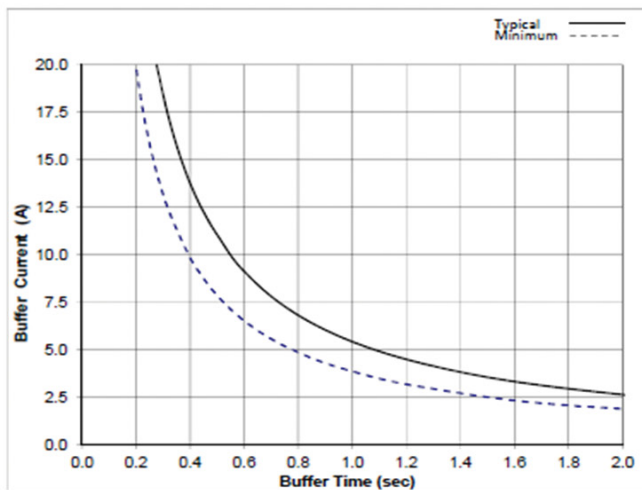
See website for detailed specifications, test methods and installation manual

(1) Fixed and VIN-1 mode is switch selectable on the front panel

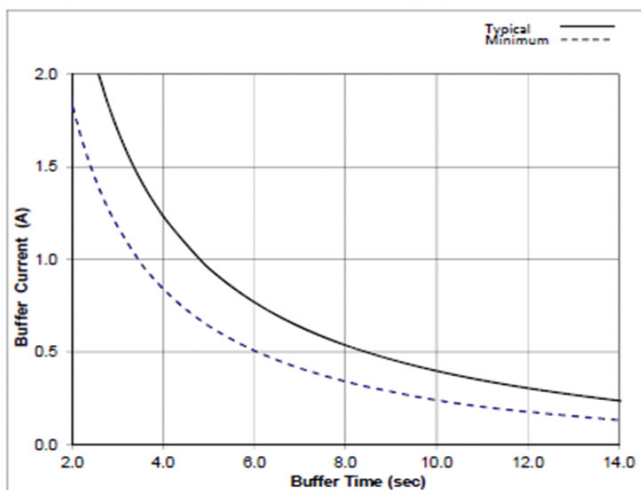
## Buffer Time Versus Buffer Current

### FIXED Mode and Nominal Buffer Voltage

a) Buffer time : 0 - 2 sec

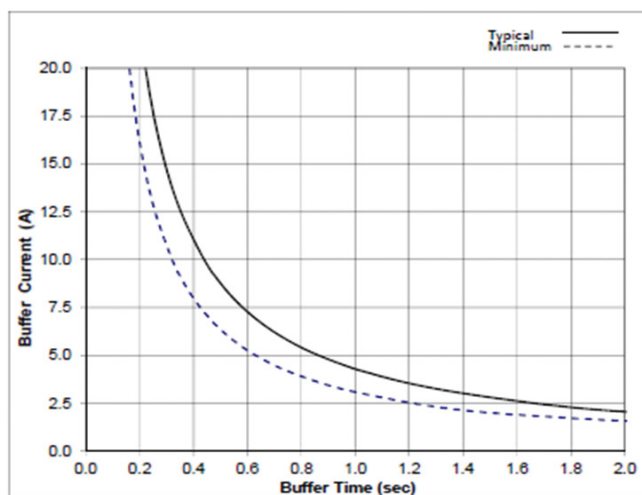


b) Buffer time for small buffer current : 2 - 14 sec

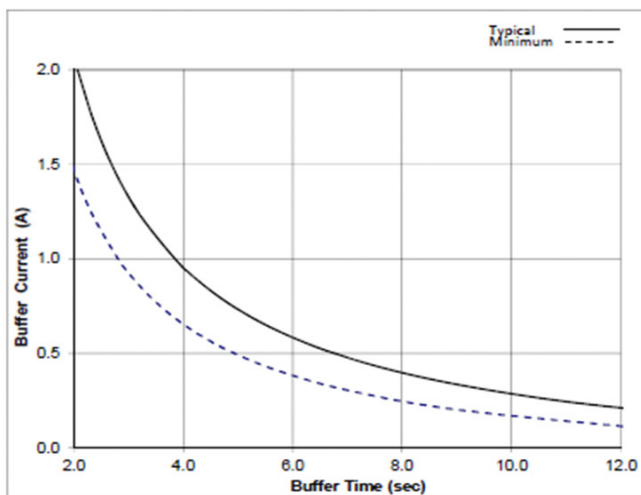


### VIN-1 and Maximum Buffer Voltage

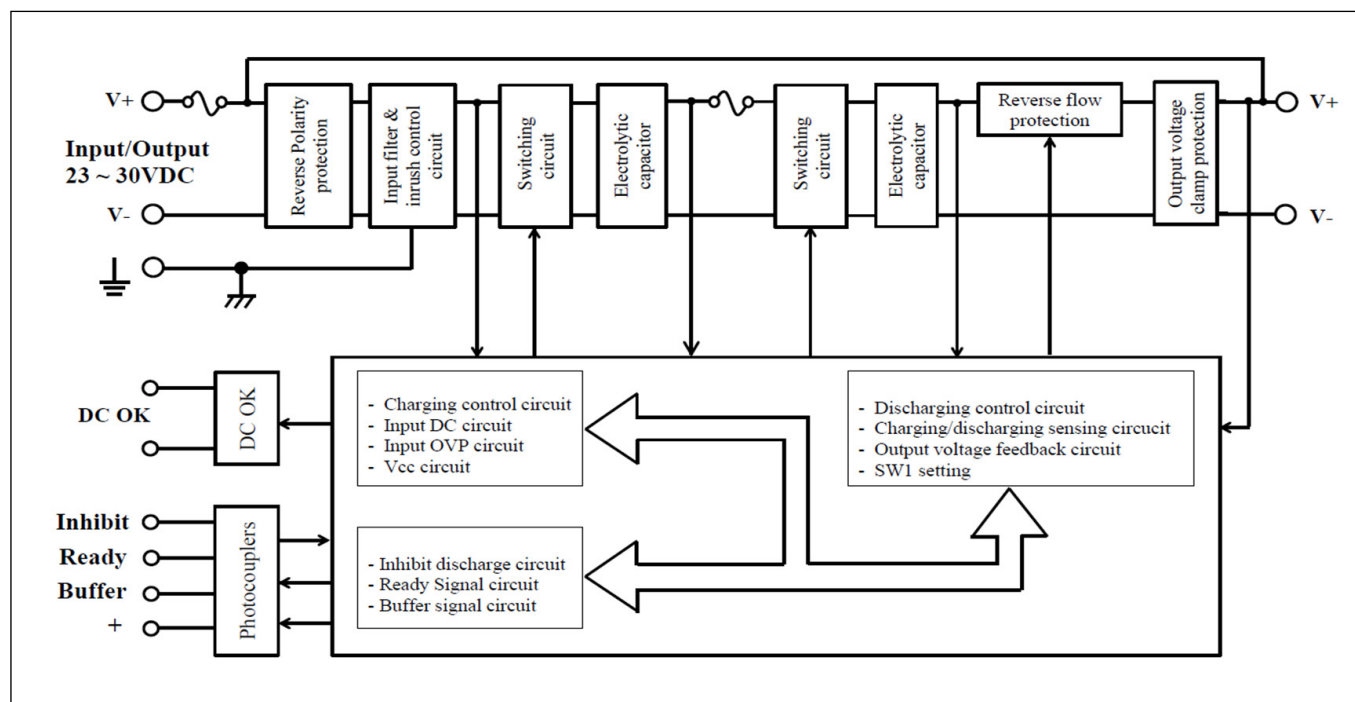
a) Buffer time : 0 - 2 sec



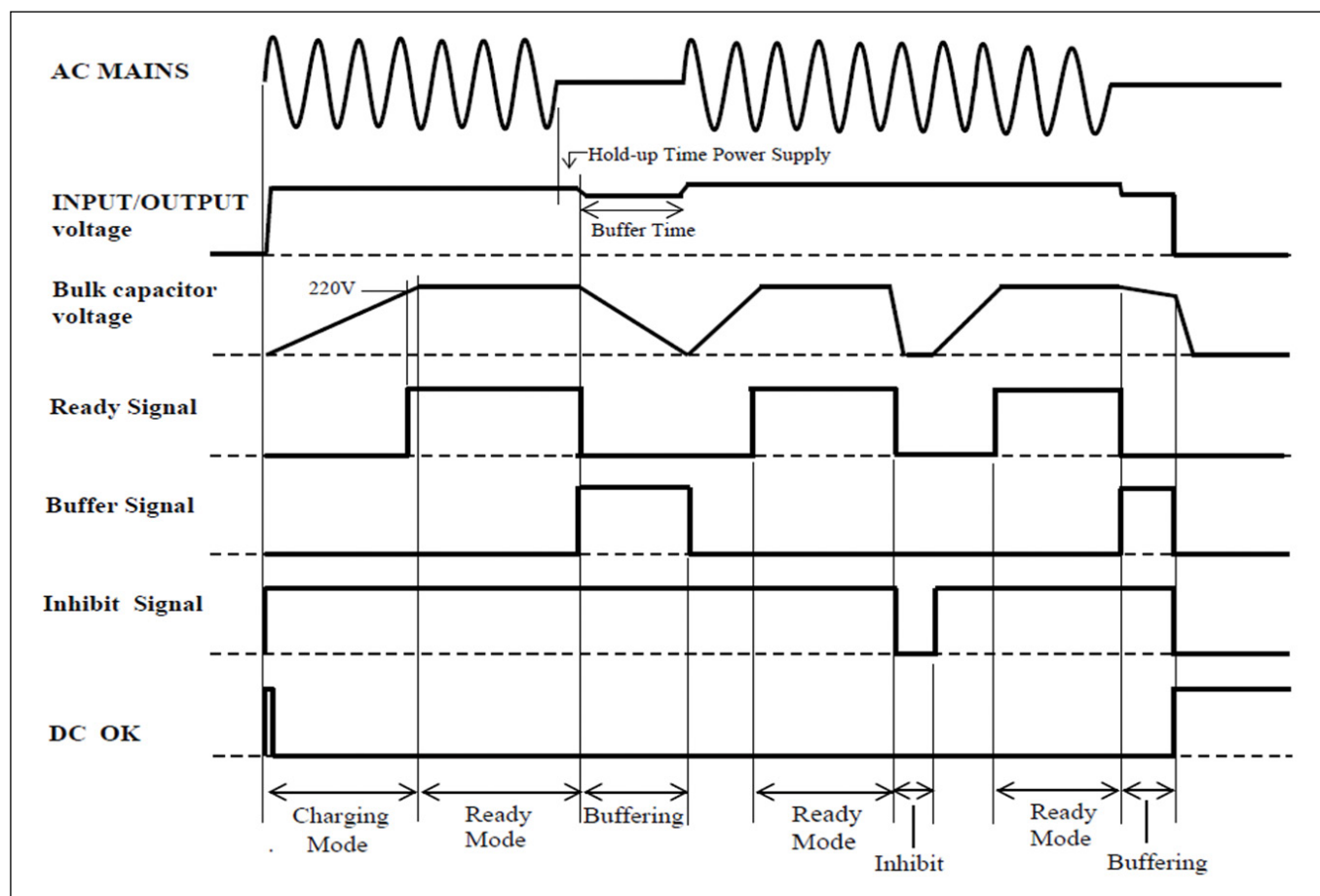
b) Buffer time for small buffer current : 2 - 12 sec



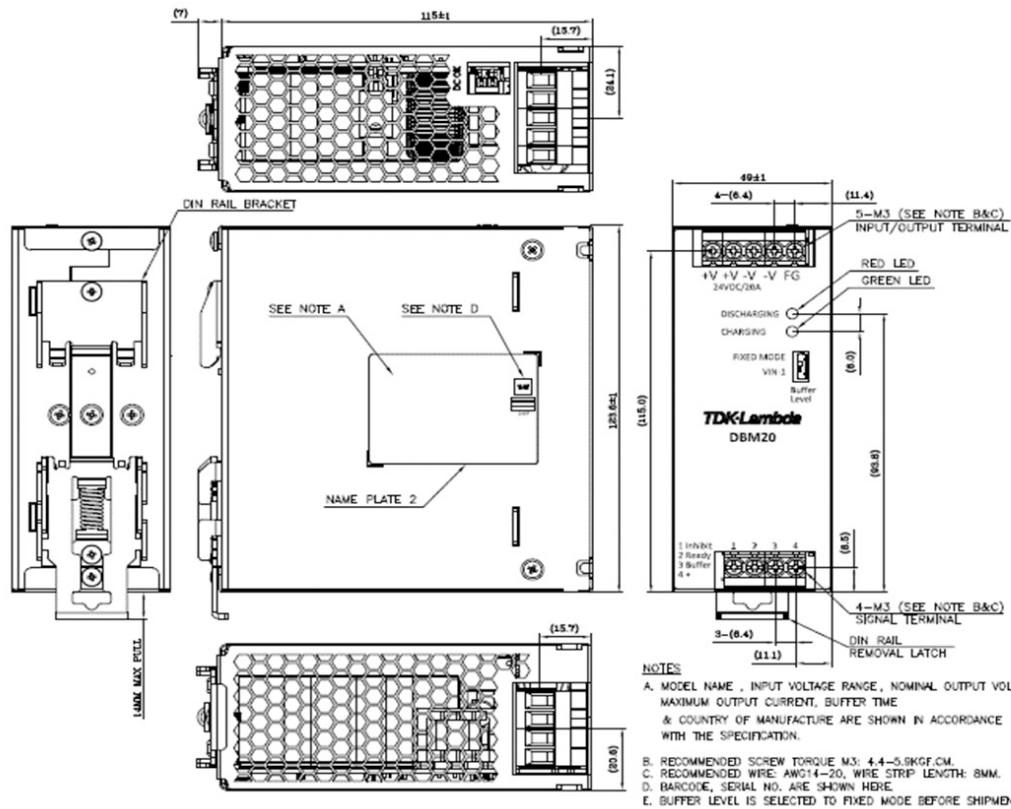
## Block Diagram



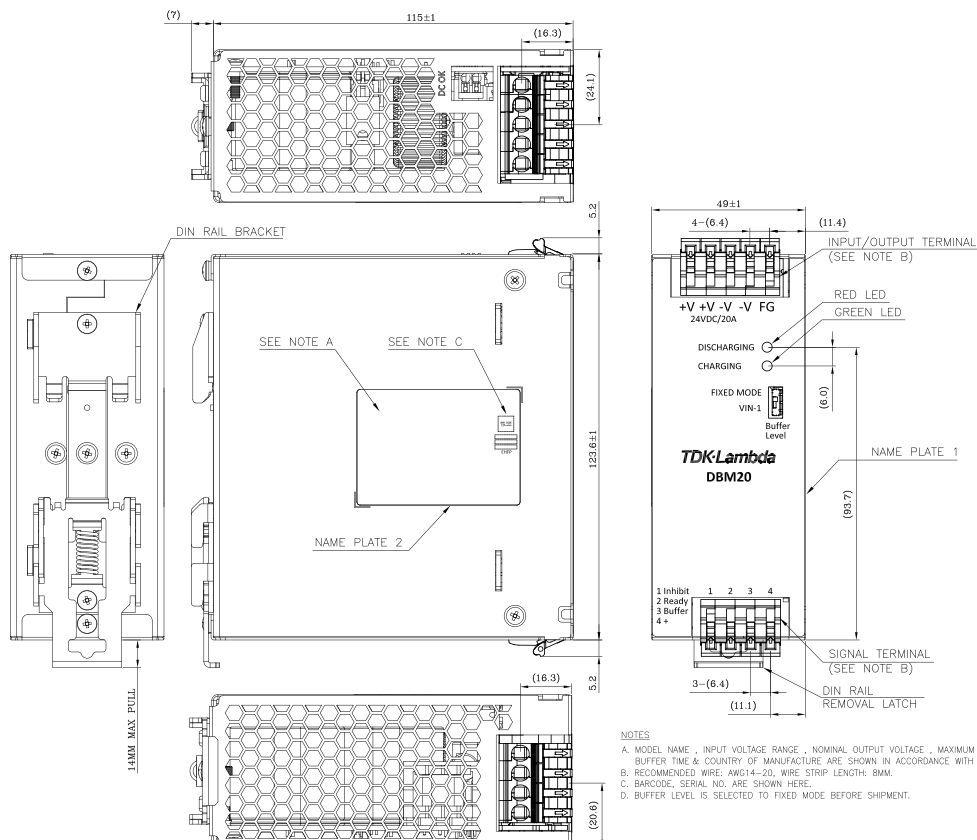
## Timing Diagram



## Outline Drawing DBM20



## Outline Drawing DBM20/E





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