VIZEN SOLUTIONS
Small step for mankind

Reference No. – VS-TD20-21/002 **Prepared By: Amit Gangwar**

Date of Release: 12.05.2020

Purpose and use of Dynamic Braking Unit & Dynamic Braking Resistor for VFDs

Inverter Type	**All**
Software version	**All**
Related Documentation	**Instruction manual / User Manual**

Introduction

DBU (Dynamic braking unit) & DBR (Dynamic braking resistor) both are peripheral devices used with VFDs when dynamic braking is needed to control motor in much more efficient way. When motor is driving heavy or high inertia load, VFD alone may not be able to maintain speed or may lose control on motor when reducing frequency as required in the machine.

Both DBU & DBR help VFD to overcome over voltage alarm and also prevent damaging VFD components when regeneration occurs in motor. Generally regeneration occurs when VFD is decelerating motor and the motor stars regenerating when the load speed is more than motor reference speed. During regeneration motor starts feeding high voltage in VFD beyond VFDs working voltage limits. In this case DBU feeds this excess voltage to DBR to dissipate this in form of heat.

DBU:

It can be internal or external part of VFD. In Fuji electric drive it is built in up to 22kw rating. Above 22kw it is used as a peripheral device and connected parallel to DC bus of VFD.The drives in which DBU is built in, external DBU unit is not required. Main work of DBU is to maintain VFD DC bus voltage under limits and dissipate excess voltage in form of heat by help of DBR. DBU is useful only when DBR is connected to it.

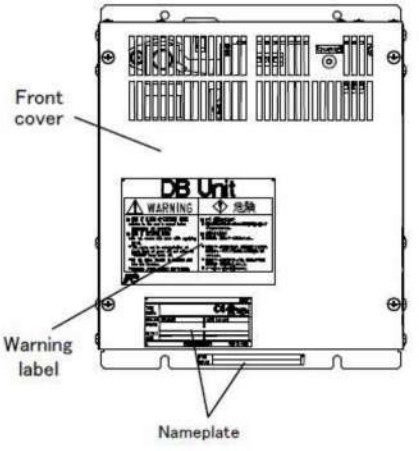

Fig.1.1 Fuji electric DBU unit

Fig.1.2 Aluminum housed wire wound Breaking resistor

Fig.1.3 Stainless steel punched grid Breaking resistor

DBR:

DBR is of many types like aluminum housed wire wound resistors (Fig.1.2) and stainless steel punched grid resistors (Fig.1.3). DBR selection also depends on duty cycle as denoted in % ED. Aluminum housed wire wound type resistors are of 50% ED and Stainless steel punched grid resistors are of 100% ED. DBR is used with DBU to control regeneration power. Minimum Resistance value of DBR is defined by DBU manufacturer and Power rating of resistor depends on motor rating and how much regeneration is there.

Note:-Always check DBR value before connecting to VFD or DBU unit and connection of DBR varies with DBU manufacturer.

Connection Diagrams for various DBU units:-

In Fuji make DBU connect Digital input is monetary as shown in fig2.1 and program that input to value "**1009".** In our case Parameter shall be **E01=1009** X1 digital input.

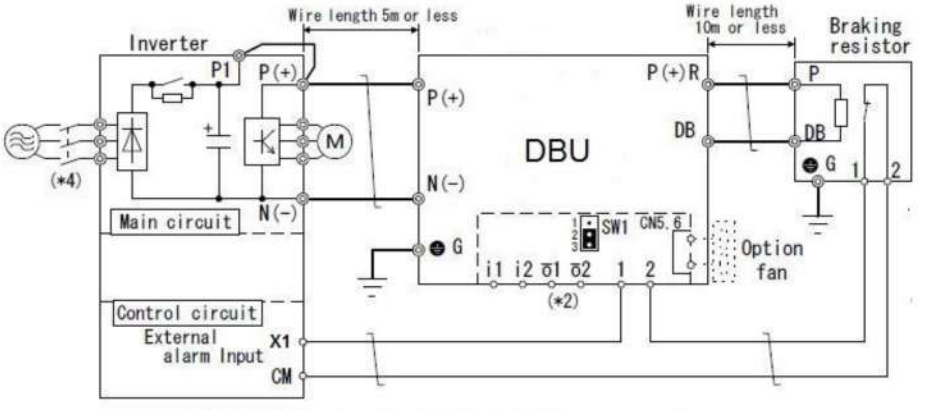

Fig2.1Fuji electric DBU & DBR connections

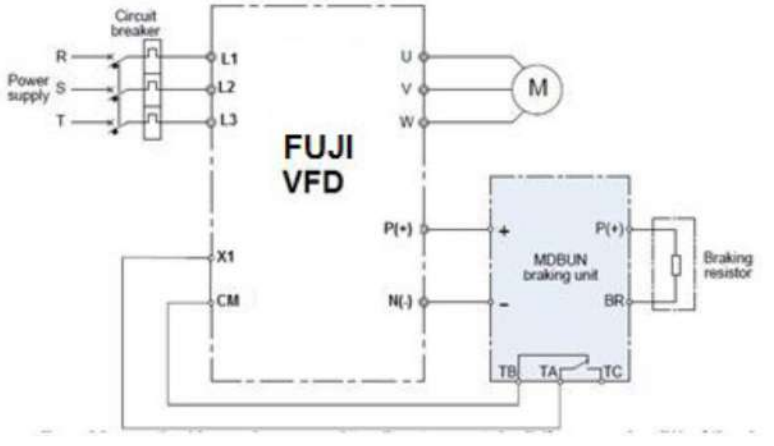

Fig2.2:- Innovance DBU & DBR connections.

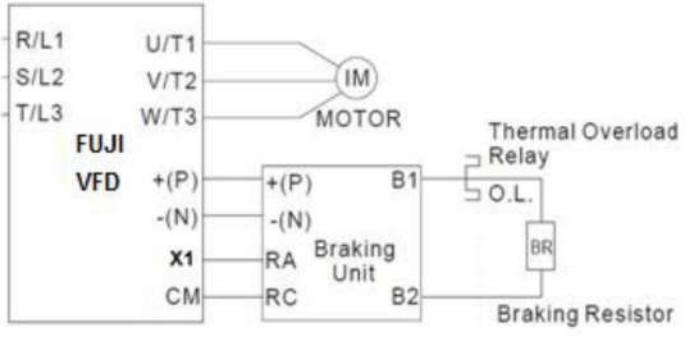

Fig2.3:- Delta DBU & DBR connections

Vizen Solutions

Plot No. 387, Sector 68, IMT Faridabad, Haryana, India - 121004

Vinit Garg | Sumit Thareja

Cell: 0129-2985391, +91 9871228877, +91 9910300659

Email: sales@vizensolutions.com