TORNATECH

Project: _____

Customer: _____

Engineer: _____

Pump Manufacturer: _____

Technical Data
Submittal Document

Model GPL+GLU

Limited Service Full Service
Across the Line Start
Electric Fire Pump Controller
with Automatic Power Transfer Switch

Contents:

Note: The drawings included in this package are for controllers covered under our standard offering. Actual AS BUILT drawings may differ from what is shown in this package.

c UL us N.Y.C. APPROVED CE

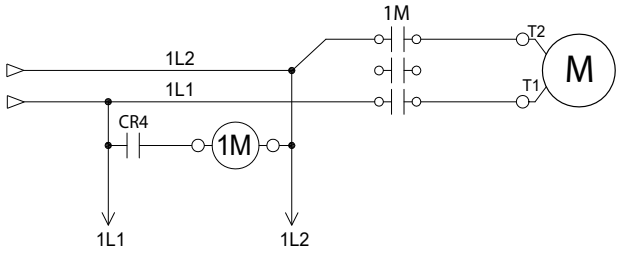
May 2024

TORNATECH

Technical Data

Model GPL+GLU Electric Fire Pump Controller with Automatic Power Transfer Switch

From Automatic Power Transfer Switch*



N.Y.C. APPROVED

Standard, Listings, Approvals and Certifications	Built to NFPA 20 (latest edition)	
	Underwriters Laboratory (UL)	• UL218 - Fire Pump Controllers • UL 1008 - Automatic power transfer switches for fire pump controllers
	New York City	Accepted for use in the City of New York by the Department of Buildings
	Optional	
	☐ CE Mark	Various EN, IEC & CEE directives and standards

Enclosure	**Protection Rating** ☐ Standard: NEMA 2 **Optional** ☐ NEMA 12 ☐ NEMA 3 ☐ NEMA 3R ☐ NEMA 4	☐ NEMA 4X-304 sst painted ☐ NEMA 4X-304 sst brushed finish ☐ NEMA 4X-316 sst painted ☐ NEMA 4X-316 sst brushed finish
	Accessories • Bottom entry gland plate • Lifting Lugs • Keylock handle	**Paint Specifications** • Red RAL3002 • Powder coating • Glossy textured finish

Shortcircuit Withstand Rating	120V to 240V - 1ph - 60Hz	
	Normal Power	Alternate Power
☐ Standard	100,000A	

*Please see Disconnecting Means details on page 3

Technical Data

Model GPL+GLU Electric Fire Pump Controller with Automatic Power Transfer Switch

Limitations	• Across the line starting only • Horsepower rating of maximum 30hp • Can only be installed where acceptable by the authority having jurisdiction • Not accepted in FM insured property
Ambient Temperature Rating	**Standard:** ☐ 4°C to 40°C / 39°F to 104°F **Optional:** ☐ 4°C to 55°C / 39°F to 131°F Controllers built in Dubai, UAE (Tornatech FZE) are supplied standard with 55°C rating.
Surge Suppression	Surge arrestor rated to suppress surges above line voltage
Disconnecting Means	• Door interlocked in the ON position • Circuit breaker continuous rating not less than 115% of motor full load current • Overcurrent sensing non-thermal type, magnetic only • Instantaneous trip setting of not more than 20 times the motor full load current • Common flange mounted operating handle
Service Entrance Rating	Suitable as service entrance equipment
Emergency Start Handle	• Flange mounted • Pull and latch activation • Integrated limit switch • Across the line start (direct on line)
Locked Rotor Protector	• Operate shunt trip to open circuit breaker • Factory set at 600% of motor full load current • Trip between 8 and 20 seconds
Electrical Readings	• Voltage phase to phase (normal power) • Amperage of each phase when motor is running
Pressure Readings	• Continuous system pressure display • Cut-in and Cut-out pressure settings
Pressure and Event recorder	• Pressure readings with date stamp • Event recording with date stamp • Under regular maintained operation, events are stored in memory for the life of the controller. • Data viewable on operator interface display screen • Downloadable by USB port to external memory device
Pressure Sensing	• Pressure transducer and run test solenoid valve assembly for fresh water application • Pressure sensing line connection 1/2” Female NPT • Drain connection 3/8” • Rated for 0-500PSI working pressure (standard display at 0-300PSI) • Externally mounted with protective cover

Audible Alarm	Alarm buzzer - 85 dB at 10ft. (3m)
Visual Indications	• Power available • Motor run • Periodic test • Manual start • Deluge valve start • Remote automatic start • Remote manual start • Emergency start • Pump on demand/Automatic start • Pump room temperature (ºF or ºC) • Lockout
Visual & Audible Alarms	Visual only • Alternate lock rotor current • Alternate power phase reversal • Automatic transfer switch trouble • Control voltage not healthy • Invalid cut-in • Lock rotor current • Loss of power • Low ambient temperature • Low water level • Motor trouble • Normal power phase reversal • Overcurrent • Overvoltage • Phase loss L1 • Phase loss L2 • Phase loss L3 • Phase unbalanced • Pressure transducer fault detected • Pump on demand • Pump room alarm • Service required • Undercurrent • Undervoltage • Check weekly test solenoid • Weekly test cut-in reached Visual and Audible • ACB in OFF or tripped • Alternate IS tripped/open • Fail to start
Remote Alarm Contacts	DPDT-8A-250V.AC • Power available • Phase reversal • Motor run • Common pump room alarm (field re-assignable)** • Overvoltage • Undervoltage • Phase unbalance • Low pump room temperature • High Pump room temperature • Common motor trouble (field re-assignable)** • Overcurrent • Fail to start • Undercurrent • Ground fault • Free (field programmable)**

**Tornatech reserves the right to use any of these three alarm points for special specific application requirements.

ViZiTouch V2.1 Operator Interface	• Embedded microcomputer with software PLC logic • 7.0” color touch screen (HMI technology) • Upgradable software • Multi-language		
Communication Protocol Capability	• Protocol: Modbus • Connection type: Shielded female connector RJ45 • Frame Format: TCP/IP • Addresses: See bulletin MOD-GPx		
Operation	**Automatic Start**	• Start on pressure drop • Remote start signal from automatic device • Deluge valve start	
	Manual Start	• Start pushbutton • Run test pushbutton • Remote start from manual device	
	Stopping	• Manual with Stop pushbutton • Automatic after expiration of minimum run timer ***	
	Timers	Field Adjustable & Visual Countdown	• Minimum run timer ***(off delay) • Sequential start timer (on delay) • Periodic test timer
	Actuation	Visual Indication	• Pressure • Non-pressure
	Mode		• Automatic • Non-automatic

***Can only be used if approved by the AHJ

Automatic Power Transfer Switch	**Surge Suppression**	Surge arrestor rated to suppress surges above line voltage
	Disconnecting Means	- Door interlocked in the ON position - Circuit breaker continuous rating not less than 115% of motor full load current - Overcurrent sensing non-thermal type, magnetic only - Instantaneous trip setting of not more than 20 times the motor full load current - Common flange mounted operating handle
	Locked Rotor Protector	• Operate shunt trip to open circuit breaker • Factory set at 600% of motor full load current • Trip between 8 and 20 seconds
	Visual Indications	• Alternate (emergency) isolating switch in the OFF position • Alternate (emergency) voltage phase to phase • Transfer switch in normal position • Transition timers
	Visual Alarms	• Transfer switch trouble • Alternate power phase reversal • Alternate isolating switch open/tripped • Alternate circuit breaker open/tripped • Alternate side locked rotor current
	Transfer switch test pushbutton	
	Bypass for re-transfer and generator shutdown	
	Electrically operated and mechanically held in the normal or alternate position	
	Provision for manual operation	
	Remote Alarm Contacts SPDT-8A-250VAC • Isolating switch in the OFF position • Transfer switch in normal position • Transfer switch in alternate (emergency) position	
	Time Delays • Momentary normal power outage override (factory set at 3 sec - field adjustable 1 to 3 sec) • Alternate (emergency) power available delay (factory set at 3 sec - field adjustable 1 to 3 sec) • Transfer trouble delay (factory set at 20 sec - field adjustable 1 to 60 sec) • Retransfer to normal (factory set at 5 min - field adjustable 1 to 20 min) • Generator cooldown (factory set at 5 min - field adjustable 1 to 20 min)	
	Voltage Sensing • Transfer to alternate (normal power dropout) 85% of nominal - field adjustable 0 to 100% • Phase reversal transfer to alternate • Retransfer to normal (normal power pickup) 90% of nominal - field adjustable 0 to 100%	
	Audible Alarm (AIS Open) Alarm buzzer - 85 dB at 10ft. (3m)	
	Generator Start Connection SPDT-8A-250V.AC	

☐ A4	Flow switch provision
☐ A8	Foam pump application w/o pressure transducer and run test solenoid valve.
☐ A9	Low zone pump control function
☐ A10	Middle zone pump control function
☐ A11	High zone pump control function
☐ A13	Non-pressure actuated controller w/o pressure transducer and run test solenoid valve
☐ A16	Lockout/interlock circuit from equipment installed inside the pump room
☐ B11	Built in alarm panel (120V.AC supervisory power) providing indication for: • Audible alarm & silence pushbutton for motor run, phase reversal, loss of phase. • Pilot lights for loss of phase & supervisory power available
☐ B11B	Built in alarm panel same as B11 but 220-240VAC supervisory power
☐ B19A	High motor temperature c/w thermoster relay and alarm contacts (DPDT)
☐ B19B	High motor temperature c/w PT100 relay and alarm contacts (DPDT)
☐ B21	Ground fault alarm detection c/w visual indication and alarm contact (DPDT)
☐ C1	Extra motor run alarm contact (DPDT)
☐ C4	Periodic test alarm contact (DPDT)
☐ C6	Low discharge pressure alarm contact (DPDT)
☐ C7	Low pump room temperature alarm contact (DPDT)
☐ C10	Low water reservoir level alarm contact (DPDT)
☐ C11	High electric motor temperature alarm contact (DPDT)
☐ C12	High electric motor vibration c/w visual indication and alarm contact (DPDT)
☐ C14	Pump on demand / automatic start alarm contact (DPDT)
☐ C15	Pump fail to start alarm contact (DPDT)
☐ C16	Control voltage healthy alarm contact (DPDT)
☐ C17	Flow meter valve loop open c/w visual indication and alarm contact (DPDT)

☐ C18	High water reservoir level c/w visual indication and alarm contact (DPDT)
☐ C19	Emergency start alarm contact (DPDT)
☐ C20	Manual start alarm contact (DPDT)
☐ C21	Deluge valve start alarm contact (DPDT)
☐ C22	Remote automatic start alarm contact (DPDT)
☐ C23	Remote manual start alarm contact (DPDT)
☐ C24	High pump room temperature alarm contact (DPDT)
☐ C25	Second set of standard alarm contacts (DPDT) (Typical for city of Los Angeles and Denver)
☐ Cx	Additional visual and alarm contact (Specify function) (DPDT)
☐ D1	Low suction pressure transducer for fresh water rated at 0-300PSI with visual indication and alarm contact
☐ D1A	Low suction pressure transducer for sea water rated at 0-300PSI with visual indication and alarm contact
☐ D13A	High withstand rating for (normal power section) • 380v to 480v=65ka • 600v = 25ka
☐ D14	Anti-condensation heater & thermostat
☐ D14A	Anti-condensation heater & humidistat
☐ D14B	Anti-condensation heater & thermostat & humidistat
☐ D15	Tropicalization
☐ D18	CE Mark with factory certificate
☐ D26	Modbus with RTU frame format and RS485 connection
☐ D27	Motor heater connection (external single phase power source and heater on/off contact)
☐ D27A	Motor heater connection (internal single phase power source and heater on/off contact)
☐ D28	Customized drawing set
☐ D34A	Field programmable I/O board - 5 Input / 5 output
☐ D36	Redundant pressure transducer for fresh water rated for 0-500PSI

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

☐ D36A	Redundant pressure transducer for sea water rated for 0-500PSI
☐ E1	Permanent load shedding contacts
☐ E2	Temporary pump motor start period load shedding contacts
☐ E3	Temporary & permanent load shedding contacts
☐ F2	Anti condensation heater & thermostat (alternate power section)
☐ F2A	Anti condensation heater & humidistat (alternate power section)
☐ F2B	Anti condensation heater & thermostat & humidistat (alternate power section)
☐ F6A	High withstand rating for (model GLU only) : 380v to 480v=65ka • 600v=25ka

☐ L01	Other language and English (bilingual)
☐ L02	French
☐ L03	Spanish
☐ L04	German
☐ L05	Italian
☐ L06	Polish
☐ L07	Romanian
☐ L08	Hungarian
☐ L09	Slovakian
☐ L10	Croatian
☐ L11	Czech
☐ L12	Portuguese
☐ L13	Dutch
☐ L15	Turkish
☐ L16	Swedish
☐ L21	Danish
☐ L25	Chinese
☐ L28	Finnish
☐ L29	Norwegian

Additional Options:

☐ _____

☐ _____

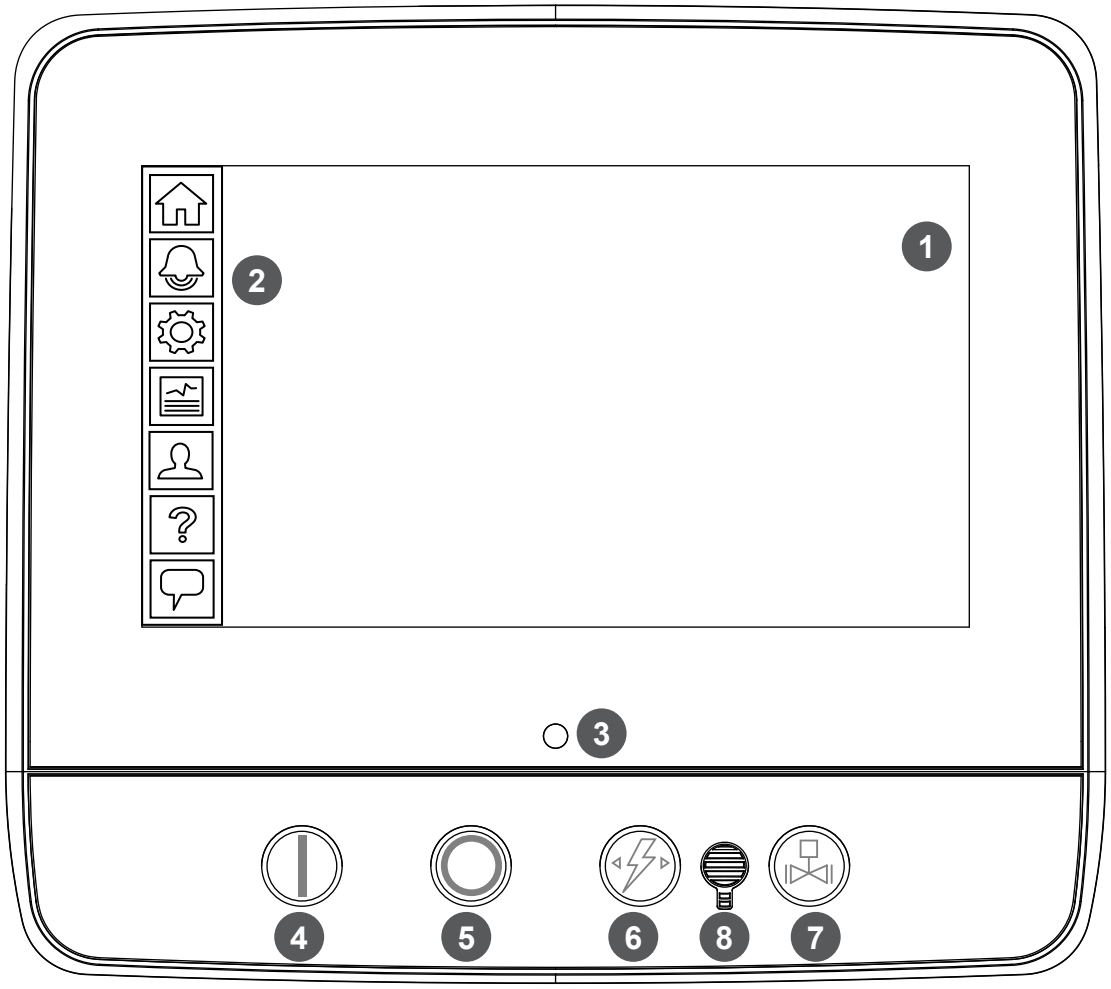
☐ _____

☐ _____

☐ _____

Note: Options chosen from this page are not electrically represented on the wiring schematics in this submittal package.

ViZiTouch V2.1 Operator Interface



1 - Color touch screen
2 - Onscreen menu
- HOME page
- ALARM page
- CONFIGURATION page
- HISTORY page
- SERVICE page
- MANUAL page
- LANGUAGES page

3 - Power LED (3 colors)
4 - START button
5 - STOP button
6 - TRANSFER SWITCH TEST button
7 - RUN TEST button
8 - Alarm buzzer

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

LIMITED SERVICE PUMP CONTROLLER WITH AUTOMATIC TRANSFER SWITCH

MODEL: GPL+GLU

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

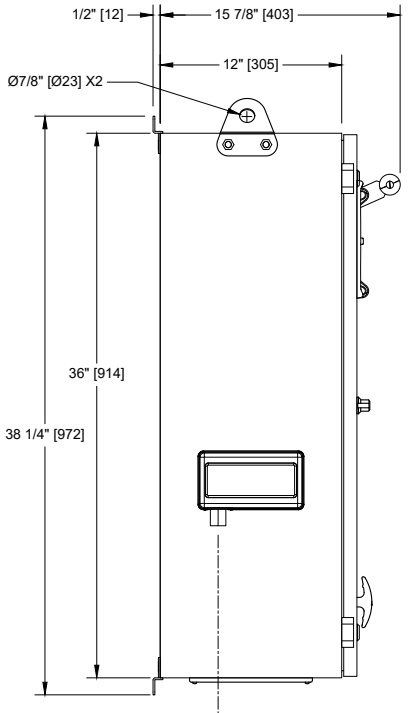
THIRD ANGLE PROJECTION

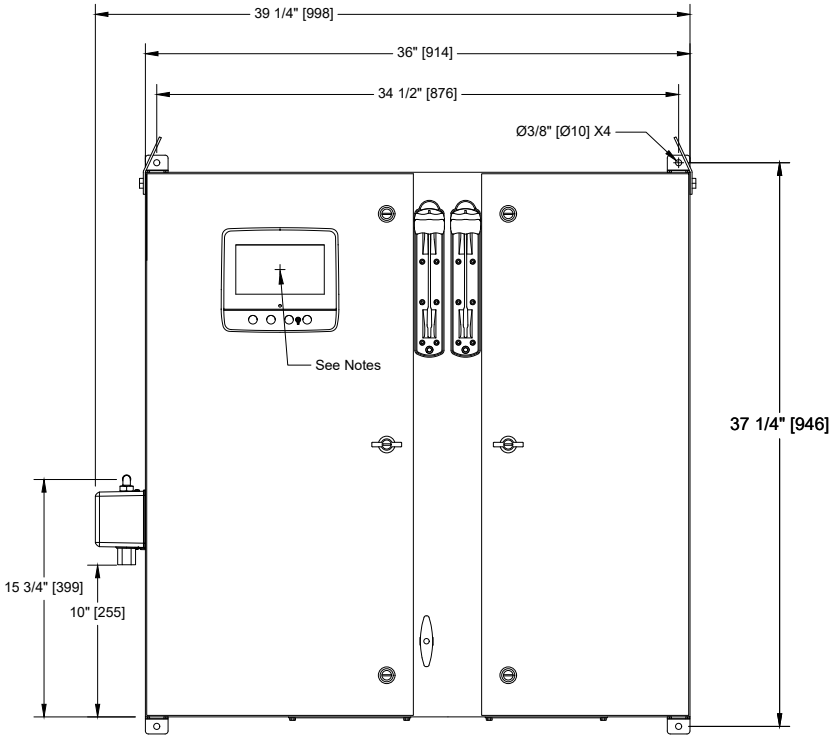
DRAWING NUMBER GPL-DI801/E

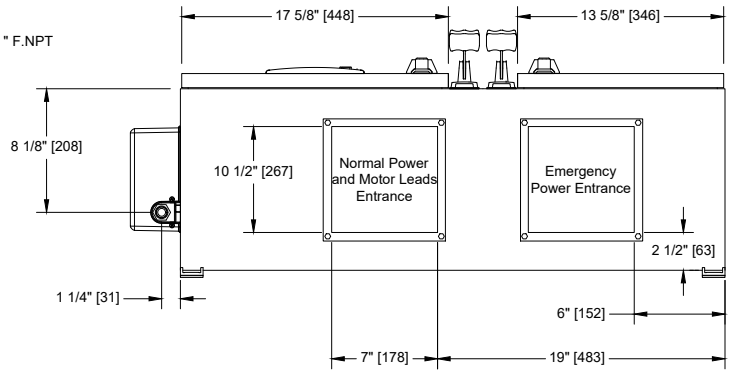
DWG REV. 0

SHEET 1 OF 1

Voltage / Power Table		
Voltage	Min HP	Max HP
1 Phase		
110 - 120	1	7.5
208	3	15
220 - 240	3	15
3 Phases		
208	3	30
220 - 240	3	30
380 - 400 - 415	3	30
440 - 480	3	30
600	3	30







Notes:

- Standard NEMA: NEMA 2
- Standard paint : textured red RAL 3002.
- All dimensions are in inches [millimeters].
- Center of screen: 29-5/8" [751] from bottom (no feet).
- Bottom conduit entrance through removable gland plate recommended.
- Use watertight conduit and connector only.
- Protect equipment against drilling chips.
- Door swing equal to door width.

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

LIMITED SERVICE PUMP CONTROLLER ACROSS THE LINE / 1 PHASE WITH AUTOMATIC TRANSFER SWITCH

MODEL: GPL+GLU

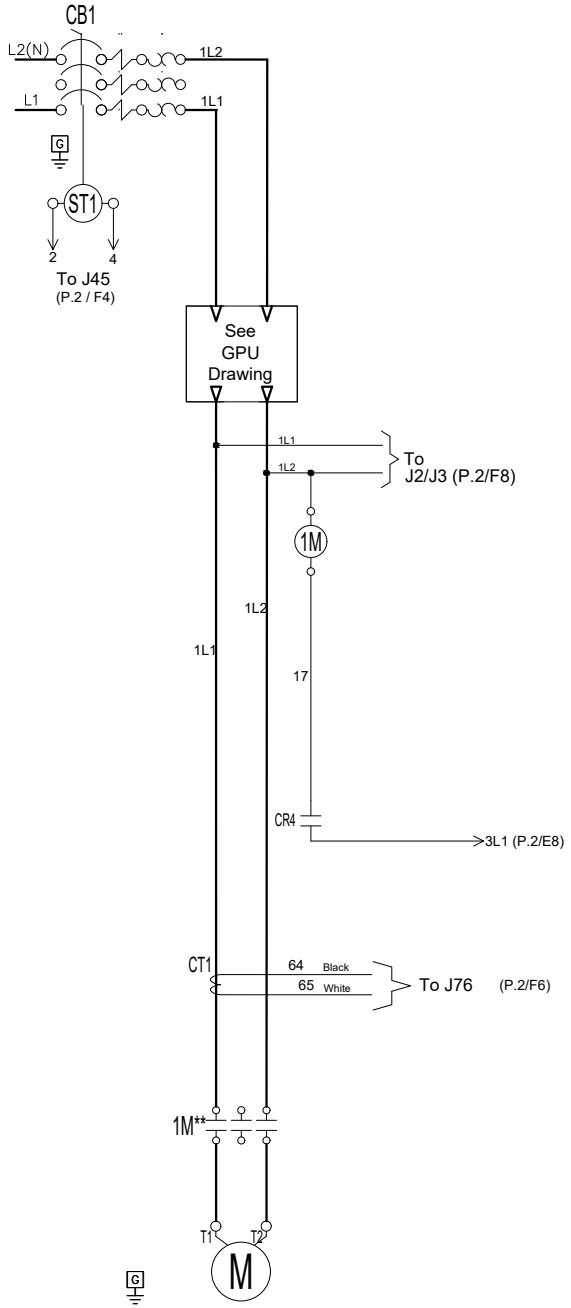
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

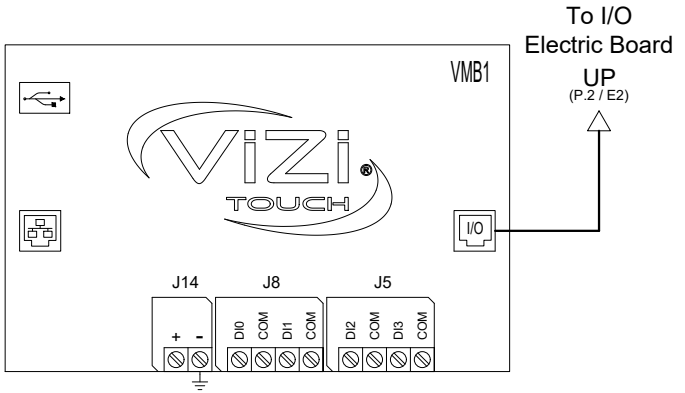
NYC Dpt of Building Approved

DRAWING NUMBER GPL-WS810/E

DWG REV. 0

SHEET 1 OF 2





Legend	
1M	Contactor
AB	Alarm Bell
CB	Circuit Breaker
CR	Control Relay
CT	Current Transformer
EB	Electric I/O Board
J	Jumper
LS	Limit Switch
PT	Pressure Transducer
SA	Surge Arrester
ST	Shunt Trip
SV	Solenoid Valve
VMB	Main Board
XTR	Transformer

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

LIMITED SERVICE PUMP CONTROLLER ACROSS THE LINE / 1 PHASE WITH AUTOMATIC TRANSFER SWITCH

MODEL: GPL+GLU

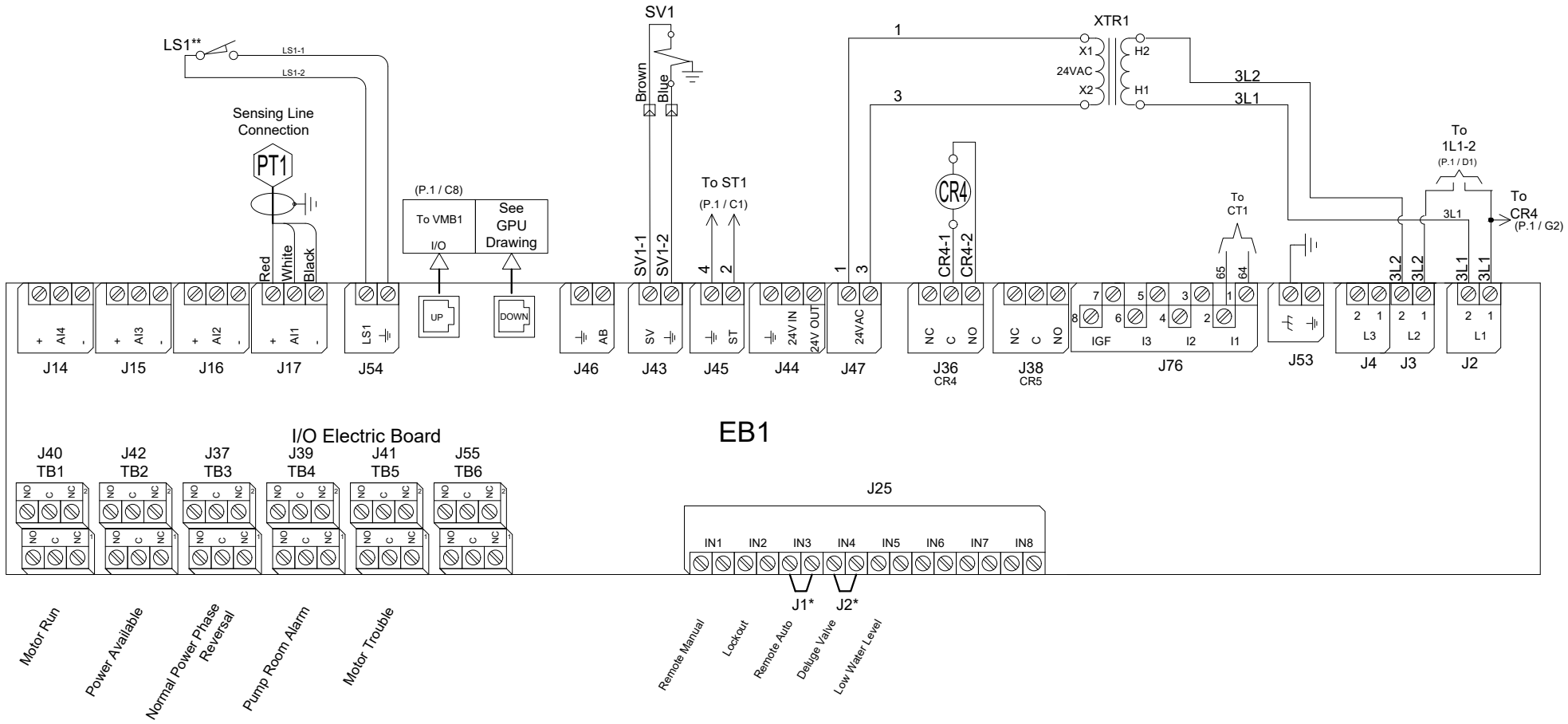
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

DRAWING NUMBER GPL-WS810/E

DWG REV. 0

SHEET 2 OF 2



* Remove jumper to use this feature

** Contact closes when emergency start is in "ON" position

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	BY	DD/MM/YY
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FINAL APPROVAL	FC	28/02/23

LIMITED SERVICE PUMP CONTROLLER WITH AUTOMATIC TRANSFER SWITCH

MODEL: GLU

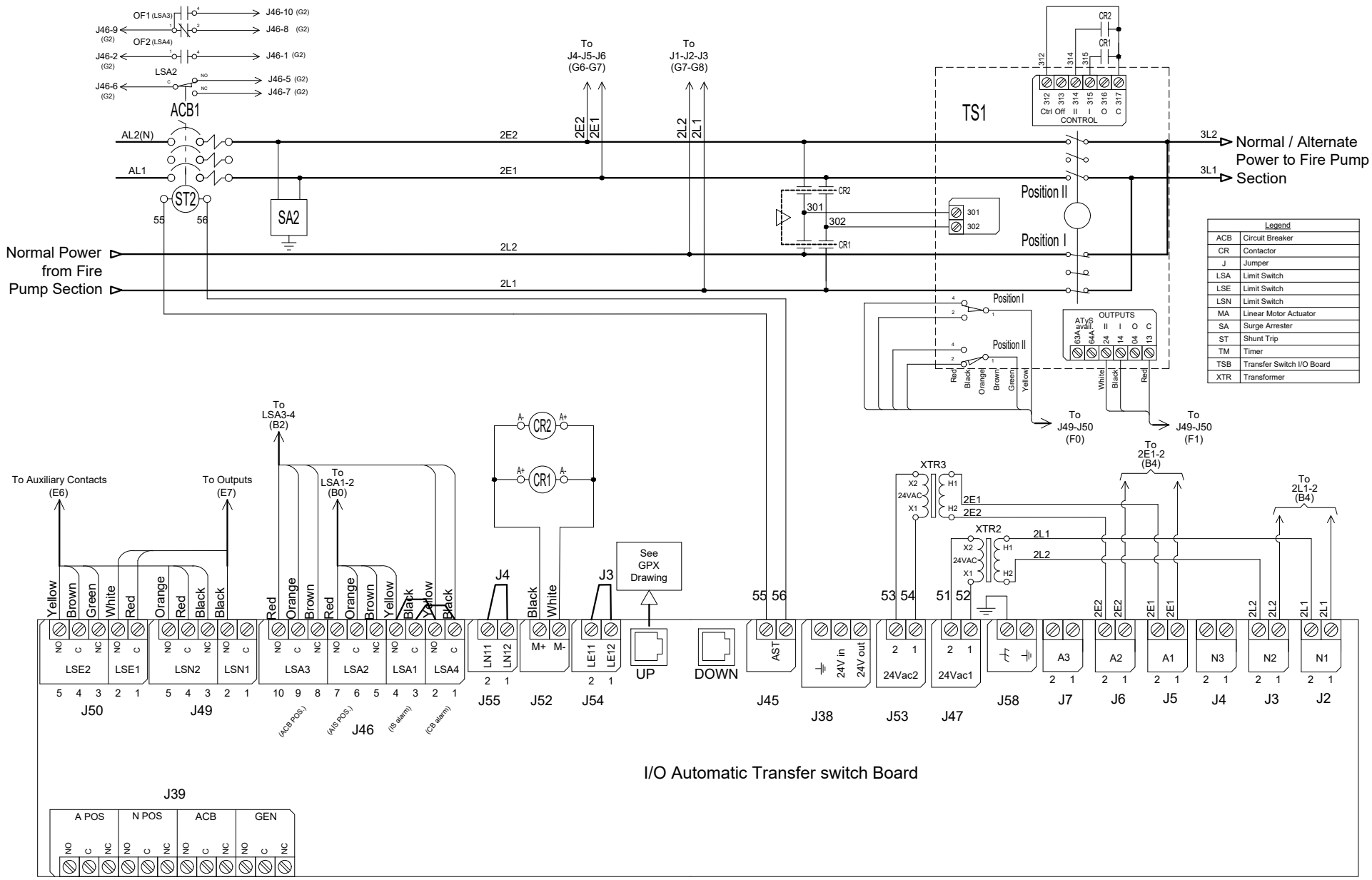
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

DRAWING NUMBER GLU-WS800/E

DWG REV. 0

SHEET 1 OF 1



Legend	
ACB	Circuit Breaker
CR	Contactor
J	Jumper
LSA	Limit Switch
LSE	Limit Switch
LSN	Limit Switch
MA	Linear Motor Actuator
SA	Surge Arrester
ST	Shunt Trip
TM	Timer
TSB	Transfer Switch I/O Board
XTR	Transformer

TORNATECH

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

LIMITED SERVICE PUMP CONTROLLER

MODEL: GPL

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

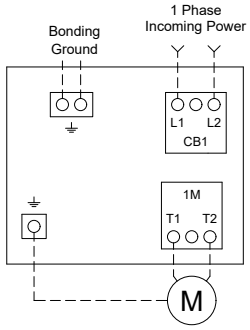
NYC Dpt of Building Approved

DRAWING NUMBER GPL-TD800/E

DWG REV. 0

SHEET 1 OF 1

Power Terminals
Model : GPL 1 Phase



Notes:
1 - For proper wire sizing, refer to NFPA70 and NEC (USA) or CEC (Canada) or local code.
2 - Controller suitable for service entrance in USA.
3 - For more accurate motor connections refer to motor manufacturer or motor nameplate.
4 - Controller is phase sensitive. Incoming lines must be connected in ABC sequence.
5 - Field wiring and lug sizes are based on copper conductors only. Do not use aluminum conductors.

Circuit breaker (CB) Field Wiring according to Bending Space (AWG or MCM). TERMINALS L1 - L2

Bending Space	3 " (76 mm)					
HP / Voltage	1	3	5	7.5	10	15
120	1x (10 to 1)	1x (8 to 1)	1x (6 to 1)	1x (4 to 1)	N/A	N/A
208	N/A	1x (10 to 1)	1x (8 to 1)	1x (6 to 1)	1x (4 to 1)	1x (3 to 1)
220 to 240	N/A	1x (10 to 1)	1x (8 to 1)	1x (8 to 1)	1x (6 to 1)	1x (3 to 1)

(Use Copper Conductors Only)

Wiring Size for motor connection for Model GPL (AWG or MCM). TERMINALS T1 - T2

HP / Voltage	1	3	5	7.5	10	15
120	1x (10 to 1)	1x (8 to 1)	1x (6 to 1)	1x (4 to 1)	N/A	N/A
208	N/A	1x (10 to 1)	1x (8 to 1)	1x (6 to 1)	1x (4 to 1)	1x (3 to 1)
220 to 240	N/A	1x (10 to 1)	1x (8 to 1)	1x (8 to 1)	1x (6 to 1)	1x (3 to 1)

(Use Copper Conductors Only)

Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.

	BY	DD/MM/YY
DRAWN BY	ACD	28/02/23
FINAL APPROVAL	FC	28/02/23

TORNATECH

LIMITED SERVICE PUMP CONTROLLER WITH AUTOMATIC TRANSFER SWITCH

MODEL: GLU

BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

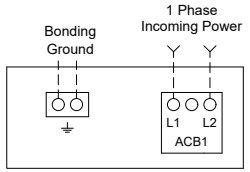
NYC Dpt of Building Approved

DRAWING NUMBER GLU-TD800/E

DWG REV. 0

SHEET 1 OF 1

Power Terminals
Model : GPL 1 Phase



Notes:
1 - Controller is phase sensitive. Incoming lines must be connected in ABC sequence.
2 - Field wiring and lug sizes are based on copper conductors only. Do not use aluminum conductors.

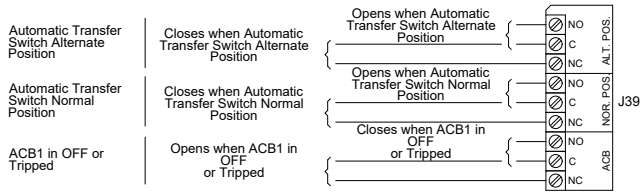
Circuit breaker (CB) Field Wiring according to Bending Space (AWG or MCM). TERMINALS L1 - L2

Bending Space	3 " (76 mm)					
HP / Voltage	1	3	5	7.5	10	15
120	1x (10 to 1)	1x (8 to 1)	1x (6 to 1)	1x (4 to 1)	N/A	N/A
208	N/A	1x (10 to 1)	1x (8 to 1)	1x (6 to 1)	1x (4 to 1)	1x (3 to 1)
220 to 240	N/A	1x (10 to 1)	1x (8 to 1)	1x (8 to 1)	1x (6 to 1)	1x (3 to 1)

(Use Copper Conductors Only)

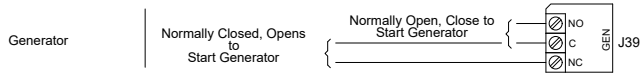
Remote Alarm Terminals (TSB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Control Terminals (TSB1)

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



Drawing for information only.
Manufacturer reserves the right to modify this drawing without notice.
Contact manufacturer for "As Built" drawing.

TORNATECH

		BY	DD/MM/YY
DRAWN BY		ACD	28/02/23
FINAL APPROVAL		FC	28/02/23

LIMITED SERVICE PUMP CONTROLLER

MODEL: GPL

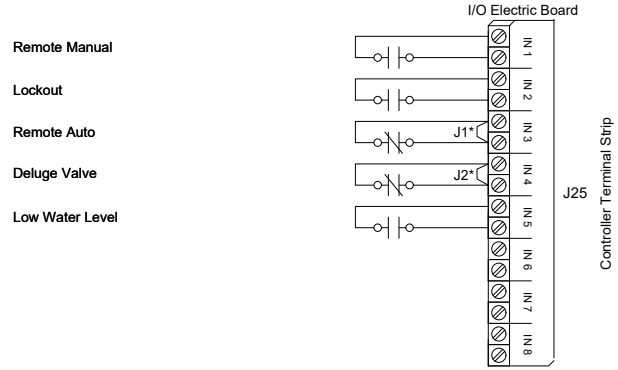
BUILT TO THE LATEST EDITION OF THE NFPA20 & NFPA70

NYC Dpt of Building Approved

DRAWING NUMBER GPX-TD802/E
DWG REV. 0
SHEET 1 OF 1

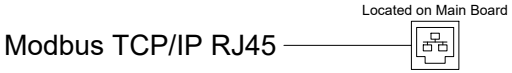
Field Connections

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



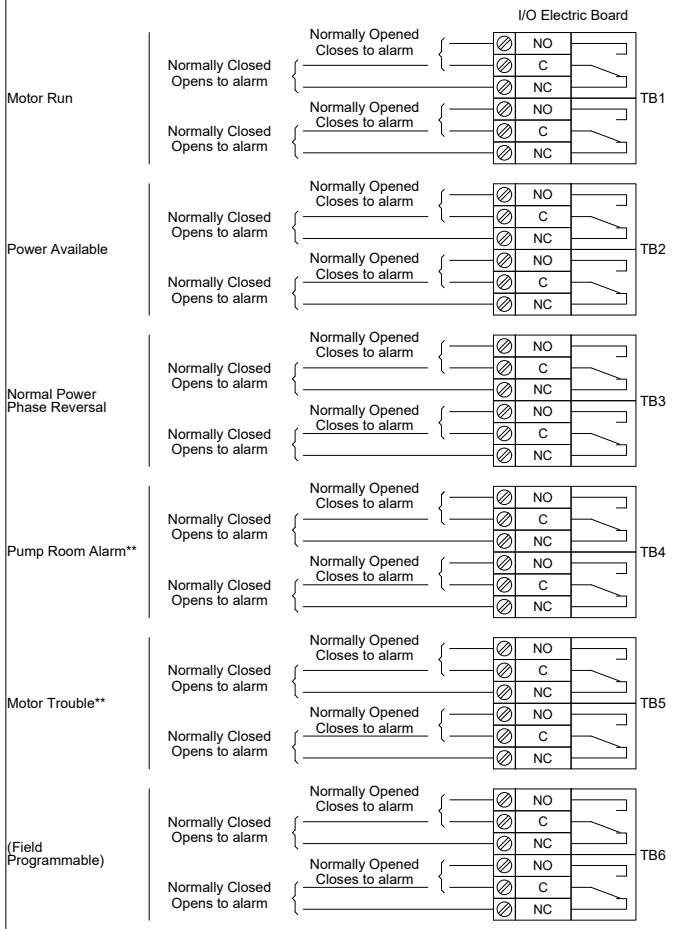
Network Connections

Terminals Wire Size:
Shielded Female Connector RJ45



Alarm Contacts

Terminals Wire Size:
24 - 12 AWG
0.5 Nm



* Remove jumper to use this feature
** Re-assignable